
Lesson Overview

Agencies like Fire, Police, Public Works, and Emergency Medical work to provide immediate response in disasters. However, during disasters, these organizations may not be able to meet immediate needs because of demands and disrupted communication and transportation systems. It is possible that following a disaster, CERTs may respond to immediate needs in their neighborhoods or workplaces.

Key Points:

- Disasters are unexpected, overwhelming, and dangerous.
- CERT teams operating in their areas can extend the capabilities of response organizations to minimize damage to life and property.

CERT Concept

Community Emergency Response Teams (CERTs) are formed by members of a neighborhood or workplace who want to better prepare for the hazards that threaten their communities.

The use of CERTs has grown from the original concept of involving community members in earthquake response operations to a program with merit for all communities and all disasters.

CERT allows community members to become active participants in learning about their hazards and preparing for them. And after training, CERT members augment emergency services capabilities, when called upon, by learning skills that they can apply following a disaster.

CERTs: Community Resource

Besides disaster-related activities, CERTs have the potential to become a known and trusted volunteer resource that can actively support the response community in many ways, such as:

- Helping with community safety projects.
- Preparing their neighborhoods or workplaces.

Infrastructure Damage and Response

Disasters can cause significant damage to the infrastructure, including:

- Transportation.
- Structures.
- Communication systems.
- Utilities, water service, and fuel lines.

Damage to infrastructure may restrict the ability of first-response personnel to identify and respond to those who need their help.

Possible Effects of Damage to the Infrastructure

Damage to . . .	Possible Effects
Transportation	<ul style="list-style-type: none">▪ Inability to assess damage accurately▪ Ambulances prevented from reaching victims▪ Police prevented from reaching damaged areas▪ Fire departments prevented from getting to fires▪ Flow of needed supplies is interrupted
Structures	<ul style="list-style-type: none">▪ Damaged hospitals unable to function normally▪ Increased risk of injury from falling debris
Communication Systems	<ul style="list-style-type: none">▪ Victims unable to call for help▪ Coordination of services is hampered
Utilities	<ul style="list-style-type: none">▪ Loss of utilities▪ Increased risk of fire resulting from gas or electrical problems▪ Inadequate water supply▪ Increased risk to public health
Water Service	<ul style="list-style-type: none">▪ Firefighting capabilities restricted▪ Medical facilities hampered
Fuel Supplies	<ul style="list-style-type: none">▪ Increased risk of fire or explosion from fuel line rupture▪ Risk of asphyxiation▪ Flow of needed supplies interrupted

CERTs Augment Response Resources

When response resources are inadequate for the situation, emergency services must focus on the highest-priority needs.

- Police will address incidents having a grave impact on public safety.
- Firefighters will suppress major fires.
- EMS personnel will focus on mass casualty events that they can reach.

Lower priority needs will have to be met in other ways. In these instances, CERTs may become responders in their neighborhoods or workplaces.

The Role of CERTs

CERT members must keep their own safety in mind as a first priority. Safety is your number one priority. Effective CERT teams are well organized, well trained, and well managed. After receiving training, you will contribute to your community by mitigating hazards and responding to disasters.

Hazard Mitigation

Hazard mitigation is preventive action. It involves:

- Reducing hazards in the home and workplace before a disaster occurs.
- Acting immediately after an event to minimize damage and risk.

Disaster Response

CERTs also respond in the period immediately following a disaster. CERT members are trained to perform many immediate response functions when professional responders are delayed.

After professional responders arrive, CERTs may assist them with critical support activities.

Disaster Response Activities

CERTs receive training about when and how to respond after a disaster. Training includes:

- Locating and turning off utilities (if it is safe to do so).
 - Extinguishing small fires safely.
 - Treating life-threatening injuries until professional assistance can be obtained.
 - Conducting light search and rescue operations.
 - Helping survivors cope with disaster trauma.
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CERT Participation in Recent Disasters and Emergencies

CERT teams have participated in many disaster responses. Below are some examples.

Northridge Earthquake (1994)

During the Northridge Earthquake, the following instances of the use of CERTs were recorded:

- Search: 203
 - Rescue: 17
 - Medical treatment: 57
 - Patient transport: 4
 - Fire suppression: 5
 - Utility control: 156
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Hurricane Floyd (1999) and Tropical Storm Gordon (2000)

During Hurricane Floyd and Tropical Storm Gordon, CERTs in Alachua County, Florida were called by the EOC to contact special-needs residents to ensure that they were aware of the approaching storms and to ascertain whether they would use the county's special needs shelters and transportation. The CERTs arranged transportation, as necessary.

Hidden Lake and Lake Louise Fires (2000)

About a dozen CERTs were used during the Hidden Lake and Lake Louise fires to provide food for the firefighters, move supplies, and assist with preparation in the area.

Olathe, KS Tornado Cleanup (2003)

CERT members from the cities of Olathe, Overland Park, Leawood, and Merriam, KS and from Johnson County government assisted first responders after tornadoes devastated the area in May 2003.

Whatcom County, Washington

CERT members in Whatcom County were used in the following situations:

- Whatcom Creek gasoline pipeline explosion (Olympic Pipeline)
- Explosion at the Georgia-Pacific Pulp & Paper Mill
- Y2K Emergency Operations Center (EOC) activation
- Sandy Point wind and flood event
- Nisqually earthquake

The CERT members who responded to the Whatcom Creek incident received The American Red Cross Real Heroes award for their contributions. CERT members in the county have received Federal, State, and local recognition for their response efforts.

Other CERT Roles

CERT teams fill other roles besides hazard mitigation and emergency response.

- **Portland NETs . . . Bigger Than Disaster Response!**
 - All around the United States, fire departments, emergency management professionals, and some law enforcement agencies are getting on board with Community Emergency Response Team training. In Portland, Oregon, CERT members (called Neighborhood Emergency Teams (NETs)) staff first aid booths at neighborhood fairs and parades; speak at PTA meetings, neighborhood association meetings, and service clubs; and assist Fire Bureau staff at community safety fairs.
 - **Mitigation Actions by CERTs.**
 - These two mitigation actions were organized and completed by the CERT members of Edgewater. The Fire Department supplied the blue hydrant markers and glue, and CERTs did the rest. They asked the homeowners permission to mark their home addresses on the street curb and for a voluntary donation and received 100% cooperation. Both of these mitigation actions were well received by the residents of Edgewater.
 - **CERT Proves to Be Valuable During the Florida Wildfires.**
 - CERT members in the Edgewater area staffed fire stations to answer incoming phone calls, disseminate public information, handle donations, and prepare meals for line personnel.
 - **Partnership for Preparedness . . . Semper Paratus.**
 - In a day of shrinking budgets and small staffs, it is difficult for any public safety agency to maintain a high level of preparedness. Detection of wildfires in rural areas still relies on a person scaling a 100-foot tower in the heat of the day to watch for smoke. Alachua County CERTs are used to supplement fire tower staff during the fire season.
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Lesson Summary

- Disasters may overwhelm emergency response resources.
 - CERTs can extend the capabilities of response organizations through hazard mitigation and response activities.
 - Before a disaster, CERTs focus on emergency preparedness and hazard mitigation.
 - After a disaster, CERTs may operate directly or assist responders in activities to save or sustain lives and protect property.
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Lesson Overview

CERTs support emergency services by preparing for disasters before they occur and by responding, when necessary, to immediate needs in their neighborhoods or workplaces after a disaster occurs.

Key Points:

CERTs help prepare by:

- Identifying and reducing potential hazards in the home and workplace.
- Developing a family disaster plan.
- Assembling a disaster supply kit.

Family and Workplace Preparedness

Family and workplace preparedness can be broken into two main areas:

- **Hazard mitigation:** Identifying potential hazards in your home and workplace and taking steps to remove or reduce those hazards.
- **Disaster preparations:** Making plans and preparations that will enable you to respond quickly in the event of a disaster.

Hazard Mitigation

Hazard mitigation involves three steps:

1. Determining your community's probable disaster threats.
2. Identifying potential hazards in your home and workplace.
3. Taking preventive action to reduce the hazards.

Mitigation Step 1: Determine Disaster Threats

Knowing what types of disasters your community could experience is an important first step. The nature of the disaster threat will help you identify any potential hazards. For example:

- In a wildfire area, flammable roofing materials and brush and vegetation near your home are potential hazards.
 - In an earthquake-prone area, unsecured objects like a bookshelf or filing cabinet are a danger.
 - In a flood-prone area, utilities below flood level can cause problems.
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Determining Disaster Threats

Disaster threats can include natural, manmade, and technological hazards. Identifying probable events in your community and their potential impact involves asking such questions as:

- Am I in a floodplain, near a fault, or near a volcano?
- Is my region prone to seasonal hazards such as hurricanes, tornadoes, or winter storms?
- Are nearby sites likely targets for terrorism?
- Am I near a nuclear or chemical plant that could release hazardous materials?

Be sure to consider natural, manmade, and technological hazards.

Mitigation Step 2: Identify Hazards

Most buildings have some features that could become hazards during a disaster. Hazards in the home and workplace fall into two main categories:

- **Structural hazards:** Hazards that are a function of the building, roof, or other components.
 - **Nonstructural hazards:** Hazards related to fixtures and building contents.
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Structural Hazards

The types of structural hazards and their significance will vary with the:

- Age of the structure.
 - Type of construction.
 - Type of disaster.
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Nonstructural Hazards

In any type of structure, there is also a risk from nonstructural hazards. Nonstructural elements include any items installed after the supporting structure of the building is complete.

Nonstructural hazards often relate to:

- Utility fixtures.
- Building contents.

Sometimes these elements are hazards in their own right. Others can become hazards during a particular natural, technological, or manmade event.

Nonstructural Hazard: Utility Fixtures

Fixtures that connect gas, electric, and water lines to the building can create hazards.

Examples include:

- Broken gas line connections from water heaters or ranges displaced by shaking, water, or wind.
 - Electric shock hazards from displaced appliances and office equipment.
 - Fire hazards from faulty wiring, overloaded electrical sockets or extension cords, and frayed electrical cords.
 - Utility boxes and electrical outlets below flood level in flood zones.
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Nonstructural Hazard: Unsecured Building Contents

Unsecured building contents can create hazards and cause damage when they fall. This hazard is especially significant in areas subject to earthquakes.

Examples of hazards from building contents include:

- Unsecured furniture, appliances, and heavy objects on tables.
 - Items on open shelves.
 - Mirrors and pictures on walls—especially when above a sofa or bed.
 - Breakable items or chemicals stored in unfastened cabinets.
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Mitigation Step 3: Take Preventive Action

After you have identified potential problems, you can take action to correct or reduce them. Appropriate actions will depend on the type of hazard, and the severity of the problem.

Mitigating Structural Hazards:

- Bolt older houses to the foundation.
 - Strap mobile homes to the slab.
 - Strap propane tanks.
 - Raise utilities above the level of flood risk.
 - Repair unstable chimney, roof, and foundation materials.
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Mitigating Nonstructural Hazards:

- Anchor furniture such as bookshelves, filing cabinets, and hutches to the wall.
 - Strap water heater to wall studs.
 - Install flexible pipe fittings to avoid gas or water leaks.
 - Secure appliances and office equipment in place with industrial-strength Velcro®.
 - Secure cabinet doors with childproof fasteners.
 - Move heavy objects to lower shelves and cabinets.
 - Replace picture hangers with “earthquake resistant” hooks.
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Disaster-Specific Information

More detailed, disaster-specific information about hazards is included in *Are You Ready?*

You can also find disaster-specific information at FEMA's web page, *Talking About Disasters*.

Disaster Preparations

How prepared are you and your family for a disaster? The first step is to develop a comprehensive plan detailing how you will respond to various hazards.

Checklist for Home Preparedness

- **Plan**
 - Develop an escape plan that covers every room in the house and considers the needs of children and physically challenged individuals.
 - Pick two places to meet (near home and outside the neighborhood).
 - Choose an out-of-state "check-in contact" for everyone to call.
 - Identify an evacuation destination.
 - Plan two evacuation routes (in case your primary route is impassable).
 - Identify the nearest shelter location.
 - Plan how to take care of your pets (not allowed in shelters).
 - Find safe places in the home for each type of disaster.
 - Make sure that you have adequate insurance coverage.
 - Inventory your property to help prove the value of items damaged or destroyed in a disaster.
 - Review your plan periodically and update, if necessary.
 - **Practice**
 - Discuss the plan with all family members.
 - Conduct family practices (fire drills, taking shelter, following evacuation routes).
 - Make sure that family members know where fire extinguishers are and how to use them.
 - Show responsible family members how and when to shut off water, gas, and electricity at main switches.
 - Quiz children every six months to be sure that they remember the plan.
 - **Prepare**
 - Post emergency numbers by every phone.
 - Locate and label utility shutoffs.
 - Install smoke alarms on every level (especially near bedrooms).
 - Test smoke alarms monthly, change batteries twice a year.
 - Check fire extinguishers according to manufacturer's instructions.
 - Prepare a safe room for sheltering in place.
 - Photocopy vital documents. Keep originals in a safe deposit box, store one copy at home, and give a copy to someone out of town.
 - Assemble a disaster supply kit.
 - **Coordinate with Neighbors**
 - Plan how neighbors can work together after a disaster.
 - Identify neighbors' skills (e.g., medical or technical).
 - Identify neighbors with special needs (e.g., elderly, disabled) who may need help in an emergency.
 - Make plans for child care in case parents can't get home.
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Assembling a Disaster Supply Kit

Assembling the supplies that you might need following a disaster is an important addition to your family disaster plan. A disaster supply kit should include:

- Basic disaster supplies.
- Evacuation supplies stored in an easy-to-carry container.
- Home disaster supplies for sheltering in place.

Disaster Supply Kit Checklist

- **Basic Kit**
 - Portable, battery-powered radio or TV and extra batteries
 - Flashlight and extra batteries
 - First aid kit and first aid manual
 - Supply of prescription medications or copies of prescriptions
 - Credit card and cash
 - Personal identification
 - An extra set of car keys
 - Matches in a waterproof container
 - Signal flare
 - Special items (e.g., diapers or formula, hearing aid batteries, spare wheelchair battery, spare eyeglasses, or other items for physical needs)
- **Evacuation Supplies—Basic kit plus the following, packed in a portable carrier (e.g., duffel), labeled, and stored in a convenient place:**
 - Water and nonperishable food for 3 days
 - Kitchen accessories (can opener, utensils, utility knife, cooking fuel, bleach to treat drinking water, sugar, salt, pepper, plastic bags, aluminum foil)
 - Change of clothing and footwear
 - Weather protection (gloves, jacket, raincoat, sunscreen, hat, etc.)
 - Sanitation/hygiene items (toothbrush, toothpaste, soap, comb, plastic bags, tissues, sanitary napkins)
 - Local map marked with evacuation routes
 - Communication kit (contact numbers, cell phone or coins for pay phone)
 - Blankets or sleeping bags
 - Tools and other items (paper and pencil, needles and thread, pliers, shutoff wrench, shovels, tape, medicine dropper, whistle, plastic sheeting, fire extinguisher, emergency preparedness manual, tube tent, compass)
 - Entertainment (e.g., books and games)
- **Home Disaster Supplies—Basic kit and evacuation kit plus the following:**
 - A 3-day supply of food and water (1 gallon per person per day) and nonperishable food
 - Additional blankets and sleeping bags
 - Wrench to turn off utilities, stored near shutoff valves

Evacuation vs. In-Place Sheltering

When a disaster occurs or threatens, should you stay or go?

People who are near an incident site must evaluate the situation and determine whether to evacuate or shelter in place. The decision is not always easy.

If time and location allow, listen to the Emergency Alert System (EAS) for instructions from emergency management professionals who are evaluating the incident.

Evacuation

To be prepared for evacuation, you should:

- Keep your evacuation supplies in a convenient location. Some people keep evacuation supplies in the car trunk.
 - Keep your gas tank full or nearly full—especially during high-risk months for seasonal hazards.
 - If you don't own a car, make transportation arrangements with friends or local government.
 - Know your school's plan for your children if there is an evacuation.
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Sheltering in Place

In some situations, staying inside may be safer than evacuation. Know what to do for hazards in your area.

- Select a safe room—an interior room with no (or few) windows. If possible, choose a room with a toilet, water, and phone.
 - Have the home disaster supply kit ready.
 - Have water, food, snacks, books, and supplies to make the situation more comfortable.
 - Know warning systems and where to get information (NOAA Weather Radio).
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Procedures for Sheltering in Place

Specific procedures for sheltering in place vary, depending on the hazard. Read guidelines for hazards in your area. General guidelines include the following:

- Take the disaster supply kit to the safe room.
- Tune into the Emergency Alert System (EAS) for additional instructions.
- Stay tuned to EAS to determine when it is safe to go outside.

Resources

- **Are You Ready? A Guide to Citizen Preparedness**
 - General preparedness information and detailed hazard descriptions. Includes emergency planning and disaster supplies, evacuation, shelter, mitigation, animals in disaster, and recovering from disaster.
[www.fema.gov/areyouready]
 - **Ready.gov**
 - Department of Homeland Security website that provides guidelines and planning tools for terrorist incidents, including chemical, biological, radiological, and explosive incidents.
[<http://www.ready.gov/>]
 - **National Flood Insurance Program**
 - Information about flood hazards, mitigation, and flood insurance. Access to local flood maps.
[www.fema.gov/nfip]
 - **Talking About Disasters**
 - Safety information for the public. Includes mitigation strategies and emergency preparedness information.
[<http://www.fema.gov/rrr/talkdiz/>]
 - **National Fire Protection Association**
 - Information on fire prevention activities and disaster preparations.
[www.nfpa.org]
 - **The American Red Cross**
 - Links to local Red Cross offices. Information on what to do after a disaster. Disaster-specific information is provided.
[<http://www.redcross.org/services/disaster/>]
 - **FirstGov**
 - Gateway to State websites. Links to be ready for emergencies, business and industry emergency preparedness, emergency planning for schools, environmental emergencies, terrorism planning information, publications on how to prepare for natural disasters, and other resources.
[<http://www.firstgov.gov/Citizen/Topics/Family.shtml#government>]
 - **U.S. Geological Survey**
 - Information on probabilities of various disasters, by state.
[www.usgs.gov]
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Lesson Summary

Before disaster strikes, you should:

- Identify potential hazards in the home and workplace.
- Take steps to mitigate those hazards.
- Develop and practice a family disaster plan.
- Assemble a disaster supply kit.

Immediately after a disaster, you may need to shut off utilities to mitigate fire risk.

The Basis for CERT Participation

The Emergency Operations Plan (EOP) describes how the community will prepare for, respond to, and recover from an emergency or disaster. The EOP:

- Establishes emergency management and emergency response organizations using the Incident Command System, and assigns responsibility for key positions.
- Establishes lines of authority and coordination among community departments, agencies, and organizations.
- Describes how protection will be provided for people and property.
- Identifies available response resources.

CERTs are part of the response organization outlined in the EOP.

Incident Command System

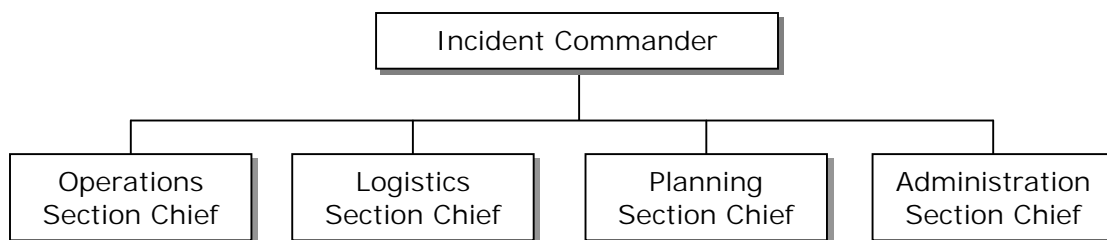
To understand the CERT organization, it is helpful to know a little about the **Incident Command System (ICS)**. ICS is the system used by professional responders to manage and respond to emergencies and disasters.

The basic ICS structure is established by the first person at the scene, who becomes the **Incident Commander (IC)**.

In a small incident, the IC may handle all duties—much like a police officer at a traffic accident. In larger events, the IC delegates responsibility for some duties to make the overall response more manageable.

ICS Expansion

The ICS structure is designed to be flexible, expanding and contracting with the needs of the incident. As needs and demands at the incident expand, the IC will assign people, called **Section Chiefs**, to help manage the incident. The Section Chiefs are shown in the chart below. As the incident expands further, tasks that need to be accomplished are assigned to one of the ICS Sections.



CERTs and ICS

When working in their neighborhoods or workplaces, CERTs use ICS to manage their activities.

Initially, all CERT members report to their neighborhood or workplace **staging area** (a predesignated assembly area) with their disaster supplies. Along the way, each team member records the locations and types of damage that they see. This information will be used to establish priorities and make decisions about whether and how CERTs will respond.

The CERT Team Leader

The first CERT member to arrive becomes the Incident Commander. He or she begins managing operations until the designated CERT **Team Leader** arrives.

When the Team Leader arrives at the staging area, he or she becomes responsible for managing CERT operations until relieved by the first professional responder on the scene.

The Team Leader:

- Ensures that information is continually gathered about injuries and damage.
 - Makes ICS position assignments.
 - Communicates and coordinates with professional responders.
 - Ensures that team operations are documented.
 - Prioritizes the CERT response to the incident—to do the greatest good for the greatest number of people.
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The Incident Command Post

The CERT Incident Command Post is located near the staging area. From this location the CERT Team Leader and Section Chiefs manage and direct CERT team activities.

If the Team Leader has to leave the Incident Command Post for any reason, he or she passes the responsibility for team operations to another CERT member who then becomes the Incident Commander.

Benefits of the CERT Structure

Establishing this organizational structure helps CERT Team Leaders to:

- Direct team resources to do the greatest good for the greatest number of people.
 - Ensure team safety by having an accountability system and management structure.
 - Communicate more effectively with fewer people.
 - Manage information more effectively.
 - Document CERT response activities.
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CERT Teams

CERTs may operate as a single team that performs all activities as required or, CERTs may be assigned to smaller teams.

The teams assigned will be based on incident needs. Typical team assignments include:

- Fire Suppression Teams.
 - Search and Rescue Teams.
 - Medical Teams.
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Team Makeup

If CERTs are assigned to smaller teams, each team must have:

- At least three members.
- A designated leader.

One team member serves as a runner and relays messages between the team and the Operations Section Chief at the Incident Command Post. The other two team members become a “buddy team” and respond to incidents as directed. The designated Team Leader is responsible for ensuring team safety, communicating with the Section Chief, and carrying out the assigned tasks.

CERT Mobilization

When an incident occurs, CERT members first take care of matters close to home. This includes handling any concerns related to:

- Themselves.
- Their families.
- Their homes.
- Their immediate neighbors.

Individuals will not be able to function effectively as CERT members until such concerns have been addressed.

Once matters in their immediate area have been resolved, CERT members function according to the standard operating procedures for their team.

Communication

Two-way communication between the CERT Team Leaders and CERT teams operating in the field is vital.

During the response, situations and priorities may change rapidly. CERT Team Leaders must be aware of these changes and must be able to communicate this changing information. Doing so helps to ensure that CERT members act safely and do the greatest good for the greatest number of people.

CERT Decisionmaking

Two-way communication between the CERT Team Leaders and the CERT teams operating in the field promotes good decisionmaking because both CERT Team Leaders and CERT teams will have the most current information about disaster events.

Because team safety is always the first priority, all decisions will be made with one key question in mind:

Is it safe for CERT members to attempt this task?

CERT Documentation

CERTs also play an important role in incident documentation. Efficient flow of information is vital for:

- Deploying CERT teams to do the greatest good for the greatest number of people.
- Accounting for CERT members.
- Tracking injuries and damage.
- Developing an understanding of the overall situation.
- Providing documentation to responders when they arrive.

Standard forms are available for many types of CERT documentation.

Lesson Summary

- The Incident Command System is used to manage emergency operations.
 - CERTs use this system, which expands and contracts as needed to handle the situation.
 - Efficient two-way communication is essential for effective decisionmaking.
 - The CERT decisionmaking process is guided by the goal of CERT team safety.
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Lesson Overview

This lesson introduces you to the data-gathering process known as “sizeup.” The data gathered through sizeup is used to make decisions to determine if it is safe for CERT members to take action, the actions that they should take, and in what order.

Key Points:

Completing the steps in a sizeup is the way that CERTs gather, assess, and communicate damage information; determine whether it is safe to take action; and determine what actions to take.

A thorough sizeup can make the response safer and more efficient by:

- Identifying potential hazards.
- Identifying needs.
- Prioritizing actions based on safety, capabilities, and resource requirements and doing the greatest good for the greatest number of people.

Sizeup

Sizeup is an ongoing process of gathering facts and analyzing the situation to determine if it is safe to help—and how. The information that CERT members gather will help the Incident Commander and Team Leader establish priorities, make decisions, and take actions to save lives.

Sizeup Process

The nine steps involved in sizeup are:

1. Gather facts.
2. Assess and communicate the damage.
3. Consider probabilities.
4. Assess your own situation.
5. Establish priorities.
6. Make decisions.
7. Develop plans of action.
8. Take action.
9. Evaluate progress.

Step 1: Gather Facts

Facts that CERT members should consider are:

- Time of day and day of the week the damage occurred.
- Type and extent of damage.
- Types of structures damaged.
- Weather conditions.
- Other hazards.

Time of Day and Day of the Week

CERT operations may be influenced by:

- Where populations were when the damage occurred:
 - At home in residential areas.
 - At work in commercial areas.
 - Where people are located in their homes.
 - How much daylight is available.
 - The emergency services that are available, especially in the evenings or on weekends.
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Type and Extent of Damage

CERTS use general guidelines for assessing damage:

Light damage includes:

- Superficial damage.
- Broken windows.
- Fallen or cracked plaster.
- Minor damage to interior contents.

Moderate damage includes:

- Visible signs of damage.
- Decorative work that is damaged or has fallen.
- Visible cracks in plaster.
- Major damage to interior contents.

Heavy damage includes:

- Partial or total collapse or tilting.
 - Obvious structural instability.
Heavy smoke or fire, known hazardous materials (e.g., gas leaks), or rising or moving water.
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Types of Structures Damaged

The types of structural hazards and their significance will vary with such factors as age, size, and type of structure.

Weather Conditions

Severe or extreme weather can impact victims and rescuers alike.

Other Hazards

Other hazards that might impact operations include hazardous materials, flooding, and vermin.

Step 2: Assess and Communicate Damage

When in doubt about the level of damage, CERT members should always use the more serious damage assessment.

Light Damage to a structure is indicated by:

- Superficial or cosmetic damage.
- Broken or cracked plaster.
- Minor damage to the interior contents.

CERT Mission: Locate, triage, and treat victims. Prioritize the removal of victims to a medical treatment area.

Moderate Damage to a structure is indicated by:

- Decorative work damaged or fallen.
- Many visible cracks in plaster.
- Major damage to interior contents.

CERT Mission: Locate, triage, and evacuate victims. Minimize the number of rescuers and time inside the structure.

Heavy Damage to a structure is indicated by:

- Partial or total collapse or tilting.
- Obvious structural instability.
- Movement off foundation.

CERT Mission: Warn others of the danger. **Never enter heavily damaged structures.** If possible, shut off utilities from the outside and collect information to give to professional responders.

Step 3: Consider Probabilities

CERTS must identify potentially life-threatening risks with an eye toward:

- How stable the situation really is.
 - What else could go wrong.
 - The implications for CERT activities.
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Stability of the Situation

Nonstructural damage or instability inside a structure may pose real danger for CERT members. Rescuers need to evaluate their entire surroundings for the presence of such things as:

- Hazardous materials,.
 - Unstable furniture or fixtures inside a structure.
 - Damaged gas or electric lines.
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What Else Could Go Wrong?

Ask “What if . . .?” questions such as:

- What if there is an aftershock?
 - What if you smell or see smoke?
 - What if a wall that appears stable shifts and collapses?
 - What if the electricity fails while CERT members are in the building?
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Implications for CERT Activities

The risks associated with the stability of the situation and potential dangers can be reduced using strategies such as spotters to look for potential collapse or remedial stabilizing actions.

Step 4: Assess Your Situation

During step 4 of the sizeup, CERT members will use everything that they've learned to answer the following questions:

- What problems have been identified?
 - What resources are available to apply to these problems while maintaining safe operations?
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Resources and Planning Questions

- Personnel Resource Planning Questions
 - Who lives and/or works in the area?
 - What skills or hobbies do they have that might be useful for CERT operations?
 - When are they most likely to be available?
 - What is the most effective means of mobilizing their efforts?
 - Equipment Resource Planning Questions
 - What useful equipment is available locally and where is it?
 - Do you need permission to use it?
 - Who can operate it safely?
 - Tools Resource Planning Questions
 - What useful tools or medical supplies are available?
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Step 5: Establish Priorities

The following principles should govern the establishment of priorities:

- CERT member safety is the number one priority.
- Doing the most good for the greatest number of people.
- Efficient use of the resources available.

Step 6: Make Decisions

Based on the priorities established in Step 5, the CERT Team Leader makes decisions about what the CERTs will do and in what order.

Step 7: Develop Plan of Action

During this step, the Team Leader decides specifically how the team will conduct its operations, considering the highest priority tasks first.

Written Plan of Action

Written plans should be developed for complex situations. Even a simple written plan will:

- Help maintain focus on established priorities.
- Provide accountability for actions taken, resources applied, and expected outcomes.
- Provide post-incident documentation.

Steps 8 & 9: Take Action and Evaluate Progress

- **Step 8 - Take Action.** CERT members implement the plan of action.
- **Step 9 - Evaluate Progress.** Evaluation focuses on both the effectiveness and safety of the operation. This is the most critical step.
- **Ongoing.** Evaluation results are fed back into the decisionmaking process so that priorities and plans can be updated.

Lesson Summary

This lesson presented the nine steps in the sizeup process:

1. Gather facts.
2. Assess and communicate the damage.
3. Consider probabilities.
4. Assess your own situation.
5. Establish priorities.
6. Make decisions.
7. Develop plans of action.
8. Take action.
9. Evaluate progress.

The CERT Fire Safety Role

During a disaster, the first priorities of professional firefighters are life safety and putting out **major** fires. They may be hampered by impassable roads, inadequate resources, and other factors.

As a CERT member, you can assist in fire safety by:

- Putting out small fires.
- Preventing additional fires.
- Shutting off utilities.
- Helping with evacuations where necessary.

Understanding basic fire chemistry and firefighting resources will help you carry out your fire safety roles.

Fire Chemistry

In order for fire to exist, fuel, heat, and oxygen must be present.

Put all three together, and a chemical reaction (fire) can occur. Take any element away and permanently interrupt the reaction, and the fire will not ignite or reignite.

One element—fuel—is especially important because it determines fire classification and dictates fire suppression methods.

Fire Classification

Fires are classified according to the type of fuel feeding the fire.

It is extremely important to identify the fuel so that the correct method and agent for extinguishing the fire can be selected.

Class A Fires

Class A fires are those in which the fuel consists of ordinary combustibles such as:

- Paper.
 - Cloth.
 - Wood.
 - Rubber.
 - Most plastics.
-

Fire Classification (Continued)

Class B Fires

Class B fires are fed by:

- Flammable liquids, such as oil and gasoline.
- Combustible liquids, such as charcoal lighter fluid and kerosene.

These fuels burn only at the surface because oxygen cannot penetrate the depth of the fluid. Only the vapor burns when ignited.

Class C Fires

Class C fires are energized by electrical equipment such as wiring and motors.

When the electricity is turned off and is no longer feeding the fire, the fire becomes a Class A or B fire depending on the source of the fuel.

Class D Fires

Although not normally found in residential areas, Class D fires are fueled by combustible metals such as:

- Aluminum.
 - Magnesium.
 - Titanium.
 - Potassium.
 - Zirconium.
-

Firefighting Resources

One important reason for identifying the fire classification is to select the most appropriate means of suppressing the fire.

Four types of firefighting resources are available:

- **Portable fire extinguishers:** The most common device for suppressing small fires. A well-prepared home or workplace will have at least two portable fire extinguishers. There are several types of fire extinguishers.
 - **Interior wet standpipes:** Usually found in commercial and apartment buildings. These devices:
 - Usually consist of 100 feet of 1½-inch jacketed hose with a $\frac{3}{8}$ -inch nozzle tip.
 - Deliver up to 125 gallons of water per minute.
 - Should be used by three-person teams (one person to handle the hose, one to bleed air from the line, and one to control water pressure).
 - **Confinement:** Confining an interior fire by closing doors to rooms and hallways may help to restrict the spread of smoke and heat and limits the amount of oxygen available to the fire.
 - **Creative resources:** Available materials can be used to fight fires. Examples include:
 - Swimming pool or spa water and buckets.
 - Sand or dirt and shovels.
 - A garden hose.
-

Types of Portable Fire Extinguishers

There are four main types of portable fire extinguishers.

- Water extinguisher
 - Dry chemical extinguisher
 - Carbon dioxide extinguisher
 - Specialized extinguisher
-

Water Extinguisher

Water extinguishers are used on Class A fires. Use caution to avoid scattering lightweight materials with the pressurized water and spreading the fire. Standard characteristics include:

- Capacity: 2½ gallons
 - Range: 30–40 feet
 - Pressure: 110 pounds per square inch (psi)
 - Appearance: Usually silver
-

Dry Chemical Extinguisher

Dry chemical extinguishers rated for Class B and C fires have a sodium bicarbonate base.

Multipurpose dry chemical extinguishers have a monoammonium phosphate base. They are effective for Class A, B, and C fires. Standard characteristics include:

- Capacity: Approximately 10–20 seconds discharge time
 - Range: 8–12 feet
 - Pressure: 175–250 psi
 - Appearance: Usually red
-

Carbon Dioxide Extinguisher

Carbon dioxide extinguishers, while still in use, are becoming less common. CO₂ extinguishers are used on Class B and C fires. Standard characteristics of a CO₂ extinguisher include:

- Capacity: 8–30 seconds
 - Range: 3–8 feet
-

Specialized Extinguisher

Specialized extinguishers are also less common. An example of a specialized extinguisher is the Class D dry powder extinguisher, which uses special agents to remove oxygen from a Class D fire.

Portable Fire Extinguisher Ratings

Portable fire extinguishers must be rated and approved by the State Fire Marshal and by Underwriters Laboratories.

The manufacturer's label displays the extinguisher's rating and properties, including:

- Type of extinguisher.
- Classification rating.
- Strength and capacity.

Choosing the Right Extinguisher for the Type of Fire

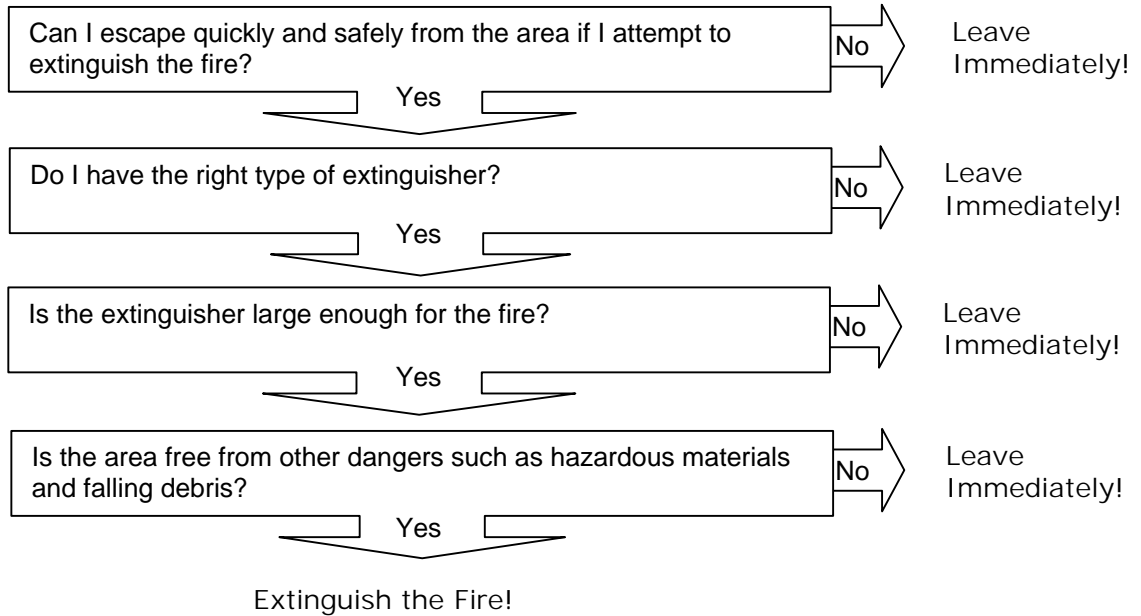
In suppressing fires, it is absolutely essential that you use the right tool for the job.

Fire Types, Extinguishing Agents, and Methods

Fire Type	Extinguishing	
	Agent	Method
Ordinary Solid Materials	Water	Removes heat
	Foam	Removes air and heat
	Dry chemical	Breaks chain reaction
Flammable Liquids	Foam CO ₂	Removes air
	Dry chemical	Breaks chain reaction
Electrical Equipment	CO ₂	Remove air
	Dry chemical	Breaks chain reaction
Combustible Metals	Special agents	Usually remove air

Deciding to Use a Fire Extinguisher

Before attempting to fight any fire with an extinguisher, ask yourself the following questions.



Lesson Summary

- Fire requires heat, fuel, and oxygen. The combination of these elements can cause a chemical exothermic reaction (fire).
 - There are four classes of fire, based on the type of fuel that feeds the fire.
 - The type and quantity of fuel dictate the best methods and equipment for extinguishing a fire.
 - The decision to extinguish a fire is based on personal safety and having the proper resources.
-

Fire Hazard Mitigation

As in other areas of preparedness and response, CERT fire safety begins at home and at the workplace. Simple fire prevention measures will go far in reducing the likelihood of fires.

Fire prevention involves:

- Locating potential sources of ignition.
- Taking steps to eliminate or reduce the hazards.

Potential Fire Hazards

Many potential fire hazards in the home and workplace fall into three categories:

- Electrical Hazards
- Natural Gas Hazards
- Flammable Liquids

Electrical Hazards

Electrical hazards are often caused by electrical overloads and faulty electrical appliances.

Examples of potential hazards include:

- Overloaded electrical outlets.
- "Daisy-chained" power strips (one plugged into another).
- Use of adapters to plug 3-prong cords into 2-prong outlets.
- Extension cords used as permanent wiring.
- Electrical cords under carpets or across high-traffic areas.
- Broken or frayed electrical cords.
- Electrical appliance left on (e.g., stove, oven, etc.)

Mitigating Electrical Hazards

Mitigating electrical hazards involves eliminating potentially dangerous situations. The following are examples:

- Maintain electrical appliances properly. Repair or replace faulty appliances. Replace broken or frayed cords.
- Don't run electrical cords under carpets.
- Don't overload outlets.
- Use extension cords only for temporary purposes.

If you have too few outlets for your electrical needs, take the time to use them properly to avoid overloading. If you have other concerns about wiring, you may need an electrician to do a safety inspection and recommend improvements.

Potential Fire Hazards (Continued)

Responding to an Electrical Emergency

Emergencies sometimes occur despite our best efforts. In the event of an electrical emergency, you may have to shut off electricity at the electrical box.

- Know where the main fuse or circuit breaker box is.
- Label power shutoffs for electrical appliances and different parts of your home so that you can turn off specific items or areas if necessary.
- If you must shut off power to the building, do so in the proper order (individual switches before the main switch).
- Never enter a flooded basement to shut off the electrical supply. Water conducts electricity!

Electrical Shutoff Procedures

Shut off electrical power in this order:

1. Turn off all individual breakers, or unscrew all fuses.
2. Shut off the main circuit or the main fuse switch.

When you are certain that it is safe to turn the power back on, reverse the steps (main power first, then individual circuits.)

Natural Gas Hazards

Natural gas leaking into a home or workplace presents two types of hazards:

- **Asphyxiant:** Gas is an asphyxiant that robs the body of oxygen.
- **Explosive:** Gas is an explosive that can easily ignite.

Mitigating Natural Gas Hazards

You can take the following measures to reduce natural gas hazards:

- Install a natural gas detector near the furnace and hot water tank.
- Test the detector monthly to ensure that it works.
- Locate and label the gas shutoff valve(s). There may be multiple valves inside a home in addition to the main shutoff.
- Know how to shut off the gas, and keep a shutoff wrench nearby.

Gas Shutoff Procedures

Use a wrench to turn the valve clockwise one-quarter turn. Have a wrench stored in a specific location where it will be immediately available.

Potential Fire Hazards (Continued)

Responding to a Natural Gas Emergency

In a disaster, look for the following indicators of a natural gas problem:

- Odor of gas
- Natural gas detector indicates the presence of gas
- Indicator on the gas meter shows that gas is flowing

In these situations, do not use the phone, light switch, or anything that could ignite the gas. Turn off the meter from **outside the building**. Remember your safety and never enter the basement of a structure that is on fire to turn off any utility.

After service is turned off, it can be restored only by a trained technician.

Flammable Liquid Hazards

Many common household and office products are **flammable** or **combustible**. Flammable liquids can ignite with explosive force. The vapors—not the liquid itself—can be ignited by any open flame (a match, cigarette, or pilot light), spark, or even static electricity. The volatility of these products requires special storage and handling.

Examples of Flammable Household Products

For simplicity, we'll refer to flammable and combustible liquids simply as flammable liquids. All of these products require cautious storage and handling regardless of their flashpoint. Examples include:

- Gasoline.
- Kerosene.
- Oil.
- Charcoal lighter.
- Paint thinners and removers.
- Acetone.
- Spot removers, cleaning fluids.
- Solvents.
- Cleaning products.

Products packaged as aerosols (e.g., deodorants, hair sprays, insecticides, spray paint) can also pose a hazard if they become heated because they contain flammable propellants.

Potential Fire Hazards (Continued)

Mitigating Flammable Liquid Hazards

To minimize hazards associated with flammable liquid products:

- Read labels to identify flammable products.
 - Store them properly in approved safety containers, away from living areas.
 - Use flammable liquids in a well-ventilated area.
 - In case of fire, use a portable fire extinguisher rated for Class B fires.
-

Storing Flammable Liquids

To ensure safe storage of flammable liquids, remember the acronym L.I.E.S.:

- Limit:** Limit the amount of flammable liquids in storage.
- Isolate:** Isolate products in approved containers stored in enclosed cabinets. Protect them from ignition sources. Don't store flammables in a mechanical room. Never bring gasoline indoors.
- Eliminate:** Eliminate products that are no longer necessary by disposing of them properly. Reduce fumes by practicing good housekeeping—wipe up spills immediately.
- Separate:** Separate incompatible materials (e.g., don't store flammables near corrosives).
-

More Fire Prevention Strategies

Eliminating fire hazards associated with electricity, natural gas, and flammable liquids will go a long way toward reducing your fire risk.

There are many other ways to improve fire safety in your home and workplace.

General Fire Prevention Strategies

- **Install smoke alarms** on every level of the home and near all sleeping areas.
 - **Conduct a home hazard hunt.** Many items and conditions around the home and workplace can present fire hazards. Taking time to look for and eliminate hazards will reduce the risk.
 - **Inspect wood stoves and chimneys annually.** Burning wood leaves flammable creosote deposits in the firebox, flue, and chimney. These buildups must be removed professionally to minimize the risk of fire.
 - **Purchase heaters only if they have been laboratory tested and approved.** Follow the manufacturer's directions for use. Plug heaters directly into a wall socket, and unplug them when they are not in use.
 - **Keep combustible materials away from heat sources,** including stoves, heaters, candles, and fireplaces. Materials such as curtains, bedding, furniture, towels, clothing, bags, and boxes can catch fire quickly. Keep them at least 3 feet away.
 - **Keep matches and lighters away from children.** Children are fascinated by fire and will play with matches and lighters if they are available.
 - **Never leave fire unattended.** A controlled fire can quickly become uncontrolled. Never leave a candle, fireplace, or space heater unattended.
-

Lesson Summary

- A CERT member's fire safety role begins at home and at the workplace.
 - Electricity, natural gas, and flammable liquids can create fire hazards.
 - Taking the time to look for and eliminate fire hazards will reduce the risk.
-

The CERT Fire Safety Role

As a CERT member, following a disaster, you may be able to suppress small fires. When carrying out this role, your personal safety must be your primary concern.

There are eight basic rules for safe fire suppression. Following these guidelines will enable you to protect your own safety.

Rule 1: Use Safety Equipment

To protect your personal safety, it is important to use safety equipment at all times. Safety equipment includes:

- Gloves.
- Goggles.
- Dust mask.
- Helmet.
- Boots.

In a disaster, CERTs wear personal safety equipment.

Rule 2: Don't Try To Fight a Fire Alone

In a disaster, there is safety in numbers, so be sure that you have help.

- **Work with a buddy.** Buddies serve an important purpose: They cover your back, look around for danger, and protect your safety.
- **Have a backup team whenever possible.** A backup team covering you and your buddy just makes good sense. They can support your fire suppression efforts and can provide help if you need it.

Your first priority is your personal safety. Don't put yourself at risk.

Rule 3: Check Before Entering

When entering an area:

- Feel closed doors with the back of the hand, working from the bottom of the door up. Do **not** touch the door handle before feeling the door.
- If the door is hot, there is fire behind it. **Do not enter!** Opening the door will feed additional oxygen to the fire. Trapped fuel vapors can ignite violently.

Do not enter smoke-filled areas. Fire suppression in smoke-filled areas requires breathing and protective equipment that CERTs don't have.

Rule 4: Plan Your Exit

Fires spread much faster than you might think.

- **Always have two ways to exit the fire area.** A backup escape plan is necessary in case your main escape route becomes blocked.
- **Confine the fire**, whenever possible, as you leave the area by shutting doors as you leave.

Rule 5: Maintain a Safe Distance and Position

- **Don't get too close.** If you attempt to put out a small fire, know the effective range of your fire extinguisher. Stay near the outer boundary of that range. If you feel the heat before discharging the extinguisher, you are too close. Move up on the fire as it gets smaller to the point of extinguishment.
- **Stay low to the ground.** Smoke will naturally rise. Keeping low to the ground will provide you with fresher air to breathe. Remember, if smoke is building in a room, leave the area and confine the fire, if possible.

Rule 6: Suppress Only Small Fires

For planning purposes, a small fire is about the size of a wastepaper can and can be extinguished with one fire extinguisher.

Learn the capability of your equipment. Do not try to suppress a fire that is too large for the equipment.

Rule 7: Use the Correct Equipment in the Correct Manner

Know the proper procedure for operating a portable fire extinguisher.

Rule 8: Overhaul the Fire

Overhauling is the process of locating any potential sources of reignition, such as hidden burning material, and extinguishing them. Always overhaul fires to make sure that the fire's really out before you move on!

Using the Proper Equipment

In equipping yourself to extinguish a fire, it is important to select an extinguisher that:

- Is rated for the class of the fire to be extinguished.
 - Has the capacity for the size of the fire to be extinguished.
 - Is of a size and weight that you can effectively hold and operate.
-

Extinguisher Ratings

As you know, portable fire extinguishers are rated according to their effectiveness on various classes of fire:

- Class A—Ordinary Combustibles
 - Class B—Flammable and Combustible Liquids
 - Class C—Electrical Equipment
 - Class D—Combustible Metals
-

More on Extinguisher Ratings

Extinguishers are also rated for the size of fire that they can handle. On labels for Class A and B extinguishers, the rating is expressed as a number. The larger the number, the larger the fire on which the extinguisher may be used.

The ratings vary among classes, as shown below.

Capacity Rating

- Class A
 - Expressed in gallons, from 1 to 40
 - 1 = 1½ gallons, 2 = 2½ gallons, 3 = 3¾ gallons, etc.
 - Class B
 - Expressed in square feet of coverage, from 1 to 640
 - Class C
 - No numerical rating
 - Class D
 - No numerical rating: includes a list of the metals for which the extinguishing agent is effective
-

Operating a Portable Fire Extinguisher

The procedure for operating a portable fire extinguisher is fairly simple.

- First, **pull** the safety pin located in the handle (twist to break the seal).
- Next, test the extinguisher to ensure that it works, and **aim** the hose or nozzle at the base of the fire.
- Third, **squeeze** the trigger.
- Finally, **sweep** the base of the fire from side to side. Be sure to hold the extinguisher in an upright position as you sweep.

That's all there is to it—pull, aim, squeeze, and sweep (P.A.S.S.).

Lesson Summary

To protect your safety when suppressing fires:

- Wear protective equipment.
 - Work with a buddy and as a team.
 - Plan for safe entry and exit.
 - Maintain a safe distance and position.
 - Suppress only small fires using the proper equipment.
 - Use the P.A.S.S. procedure to operate extinguishers.
-

What Are Hazardous Materials?

Hazardous materials are materials that:

- Corrode other materials.
- Explode or are easily ignited.
- React strongly with water.
- Are unstable when exposed to heat or shock.
- Are toxic to humans, animals, or the environment.

Hazardous materials are found nearly everywhere. We have them in our homes, in our workplaces, and on our highways.

We use so many hazardous materials that we have a tendency to forget that they pose a risk—to us, our property, and our environment.

How Are Hazardous Materials and Terrorism Related?

Terrorism and hazardous materials are related because most terrorist acts will involve hazardous materials of one type or another.

The major weapons of mass destruction (WMD) are all hazardous materials:

- Explosives
 - Biological agents
 - Chemical agents
 - Radiological and nuclear materials
-

What Should CERT Members Do in Special Situations?

Even after completing the CERT classroom course, you will not be trained to respond to any situation involving hazardous materials. Containing, cleaning up, and disposing of hazardous materials takes special training and special equipment. CERT members should **never** attempt to respond to any incident involving hazardous materials.

As a CERT member, you should treat all known and suspected hazardous materials situations as **STOP** signs.

- Don't touch anything!
- Get away from the incident—uphill (if possible) and upwind.
- Warn others to stay away.
- Report the incident to 9-1-1 immediately.

Complete as many steps in the sizeup as you can from a distance. Do **not** attempt to respond.

What Should CERT Members Tell Responders?

When you call 9-1-1, provide as much information as you can about:

- What happened (as best you can determine).
- Where it happened.
- The number and types of known injuries.
- What is happening now.
- Who you are.
- Where you are.
- How you can be reached.

Never use a cell phone or two-way radio if you think that there is a risk from an explosive device!

What if You Become Contaminated?

If you think that you have been exposed to chemical or radiological contamination, leave the contaminated area. Use basic decontamination procedures to reduce your risk of injury and limit exposure.

- **Remove everything**, including jewelry.
- **Cut off clothing** normally removed over the head.
- **Wash your hands** before using them to shower.
- **Flush your entire body** with **cool** water.
- **Blot dry** with an absorbent cloth. Put on clean clothes.
- **Report to responders** who will set up decontamination facilities.

What About Treating Others?

Your personal safety is your first priority. During a hazardous materials or terrorist incident, take **self-protective** measures only. Do **not** attempt to treat victims in the contaminated area. Tell people who are leaving the area to:

- Use the basic decontamination procedures. (You can tell them what to do.)
- Wait for responders who will perform complete decontamination.

Lesson Summary

In this lesson, you have learned about:

- What hazardous materials are.
 - How terrorist incidents relate to hazardous materials incidents.
 - CERT protocols for dealing with incidents involving hazardous materials.
-

Lesson Overview

Chemicals have become a part of everyday living. They make our lives easier in innumerable ways. But, following a disaster, the same chemicals can pose a real danger to CERT members because they are spilled or mixed with other chemicals.

Key Points:

- Chemicals have become a part of everyday life.
- They make our lives easier but can be hazardous when spilled or mixed with other chemicals.
- CERT members need to know:
 - How to identify if hazardous materials pose a threat to them.
 - What actions to take when they encounter hazardous materials.

What Are Hazardous Materials?

Materials are considered hazardous if they:

- Corrode other materials.
- Explode or are easily ignited.
- React strongly with water.
- Are unstable when exposed to heat or shock.
- Are toxic to humans, animals, or the environment.

Household Chemical Emergencies

Nearly every household uses products that contain hazardous materials. You need to read the labels on products to learn how to use them properly. Most chemical accidents are preventable. However, because accidents do happen, knowing what to do if there is a hazardous materials emergency is important. Taking the appropriate actions can reduce the risk of injury.

Household Chemical Emergencies

Some household chemicals are dangerous when inhaled. Others are dangerous when ingested or absorbed through the skin.

Exposed persons can display one or more of the following symptoms:

- | | |
|--|--|
| ▪ Difficulty breathing | ▪ Irritation of eyes, skin, throat, or respiratory tract |
| ▪ Changes in skin color | ▪ Clumsiness or lack of coordination |
| ▪ Headaches, blurred vision, dizziness | |
| ▪ Cramps or diarrhea | |

The labels on products provide important information about their proper use and their dangers.

Preventing Household Chemical Emergencies

Besides using household chemicals properly, there are other ways to protect yourself in your home, such as the L.I.E.S. procedure.

- **L**imit the amount of hazardous materials that you have stored.
- **I**solate products in approved containers, and protect them from sources of ignition.
- **E**liminate products that are no longer necessary by disposing of them properly.
- **S**eparate incompatible materials.

What To Do if a Household Chemical Emergency Occurs

How you respond in a household chemical emergency may help prevent a serious injury. What you do depends on the type of exposure and the chemical.

- **If a poison is consumed**, find the container(s) and call the poison control center (800-222-1222) immediately. Follow the directions that you are given.
- **If a chemical gets into the eyes**, flush with water for at least 15 minutes. If possible, have someone else call 9-1-1.
- **If there is a danger of fire or explosion**, get out of the building immediately. When you are safely outside and away from the danger, call the fire department. Stay upwind and uphill from the building.

Identifying Stored Hazardous Materials

Hazardous materials can be stored in production facilities, storage tanks, warehouses, schools, places of worship, and other places throughout every community. To identify these locations and provide information about the hazardous materials, the National Fire Protection Association (NFPA) developed the NFPA 704 Diamond.

The NFPA 704 Diamond is a standard system for identifying the hazards associated with specific materials stored at fixed facilities.

Identifying Stored Hazardous Materials

The NFPA 704 Diamond is divided into four colored quadrants. Each color provides information about the materials inside. Blue represents health hazard, red represents flammability, yellow represents reactivity, and white provides information about special precautions.

Within the blue, red, and yellow quadrants is a number from 1 to 4. The number indicates the degree of risk associated with the material. The higher the number, the higher the risk!

The white quadrant has a symbol.

For example:

- **W** indicates a material, such as magnesium, that shows unusual reactivity with water.
- **OX** indicates a material, such as ammonium nitrate, that reacts with oxygen.

Identifying Stored Hazardous Materials

An NFPA 704 Diamond indicates hazardous materials inside a location. Because of the danger of leaking and spillage after a disaster, CERT members should consider these placards a “stop sign.”

The only actions that CERT members should take when a facility is placarded with an NFPA 704 Diamond are to warn people of the danger and to evacuate them to an uphill and upwind location.

Identifying Hazardous Materials in Transit

The Department of Transportation (DOT) has developed a placard system to identify hazardous materials in transit. DOT placards:

- Use a combination of colors, symbols, and numbers.
- Indicate hazardous cargo carried in the vehicle or rail car.

Always use caution around any vehicle in an accident because:

- Placards are not required for less than 1,001 pounds of many hazardous materials.
- Sometimes drivers forget to change the placard when they change their cargo.

Identifying Hazardous Materials in Transit

The DOT placard system is the most commonly used in the United States. There are two other placarding systems that you may also see. These are:

- The United Nations (UN) system, which is used internationally but is also used within the United States.
 - The North American (NA) system, which is being phased out but is still used on some shipments from Canada.
-

Lesson Summary

- Chemicals can become hazardous when mishandled, mixed, or spilled.
 - To protect yourself in your home or workplace, use the L.I.E.S. procedure.
 - CERTs should never enter a building placarded with an NFPA 704 Diamond.
 - If hazardous materials are present, the only actions that CERTs should take are to warn others of the danger, and evacuate them to an upwind, uphill location.
-

Lesson Overview

The threat of terrorism using weapons of mass destruction presents all first-response personnel with a new dimension in planning.

Key Points:

CERTs can prepare for and respond to a possible terrorist attack by:

- Keeping informed.
 - Developing a terrorism response plan.
 - Assembling a disaster supply kit.
-

Terrorism Preparedness

Terrorism is violence against civilians to further political or social objectives. Terrorism preparedness is similar to planning for natural hazards.

Family and workplace preparedness can be broken into three main areas:

- Keeping informed about the terrorist threat and what you should do to protect yourself.
 - Making a plan, including how you will communicate with family members.
 - Assembling a disaster supply kit.
-

Be Informed

Your welfare and that of your family may depend on:

- Knowing the risks posed by the weapons that terrorists are most likely to use.
 - Knowing what to do for each type of risk.
-

Types of Terrorist Threats

- Biological
 - Chemical
 - Radiation
 - Nuclear Blast
 - Explosions
-

Biological Threat

- A biological threat is the deliberate release of germs or other biological substances that can make you sick.
 - You will probably learn of the danger through an emergency radio or TV broadcast, or other community signal.
-

Biological Threat Response

- **Find Out**
 - Are you in a group or area that authorities consider to be in danger?
 - What are the signs and symptoms of the disease?
 - Are medications or vaccines being distributed? Where? Who should get them?
 - Where should you seek emergency medical care if you become sick?
 - **Protect yourself**
 - Quickly get away.
 - Cover your mouth and nose with filtering material.
 - Wash with soap and water.
 - Contact authorities.
 - **Symptoms and Hygiene**
 - Symptoms of many common illnesses may overlap.
 - Use common sense, practice good hygiene and cleanliness to avoid spreading germs, and seek medical advice.
-

Chemical Threat

- A chemical attack is the deliberate release of a toxic gas, liquid, or solid that can poison people and the environment.
 - **Possible Signs**
 - Many people suffering from watery eyes, twitching, choking, having trouble breathing, or losing coordination.
 - Many sick or dead birds, fish, or small animals.
-

Chemical Threat Response

- **If You See Signs of Chemical Attack**
 - **Define** the impacted area.
 - **Get away.**
 - Avoid the contaminated area.
 - Move as far away as possible and “shelter-in-place.”
 - Determine the **fastest escape**.
 - **If You Think You Have Been Exposed to a Chemical**
 - Symptoms are watering eyes, stinging or burning skin, and difficulty breathing.
 - Strip immediately, and wash.
 - Wash carefully with water and soap if possible.
 - Seek emergency medical attention.
-

Radiation Threat

- A radiation threat (“dirty bomb” or “radiological dispersion device [RDD]”) is the use of conventional explosives to spread radioactive materials over a targeted area.
 - Not a nuclear blast.
 - Localized explosion and radioactive contamination.
 - Radiation may not be clearly identified at first.

Radiation Threat Response

- Limit exposure using:
 - **Shielding:** If you have a thick shield between yourself and the radioactive materials you will be less exposed.
 - **Distance:** Your exposure will be less the farther away you are from the blast and fallout.
 - **Time:** Minimizing the time exposed will reduce your risk.
- Watch TV, listen to the radio, or check the Internet often for official news and information.

Nuclear Blast

A nuclear blast is an explosion with intense light and heat, a damaging pressure wave, and widespread radioactive material that can contaminate the air, water, and ground surfaces for miles around.

Nuclear Blast Response

- Take cover immediately, below ground if possible.
- Quickly assess the situation.
- Determine if you can get out of the area or to “shelter-in-place.”
- Limit radiation exposure using shielding, distance, and time.
 - **Shielding:** If you have a thick shield between yourself and the radioactive materials you will be less exposed.
 - **Distance:** Your exposure will be less the farther away you are from the blast and fallout.
 - **Time:** Minimizing the time exposed will reduce your risk.
- If health care authorities advise it, take potassium iodide to protect your thyroid gland. Consider keeping potassium iodide in your emergency kit.

Explosion Responses

- **If There Is an Explosion**
 - Take shelter against a desk or sturdy table.
 - Exit the building.
 - Do not use elevators
 - Check for fire and other hazards
 - Take your emergency supply kit if time allows.

- **If There Is a Fire**
 - Exit the building as soon as possible.
 - Crawl low if there is smoke.
 - Cover your nose and mouth with a wet cloth if possible.
 - Use the back of your hand to feel the upper, lower, and middle parts of closed doors.
 - If **not hot**, brace yourself against it and open slowly.
 - If **hot**, do not open it. Look for another way out.
 - Stop-drop-and-roll if you catch fire.
 - Go to a previously designated meeting place.
 - Account for family members and supervise small children.
 - Never go back into a burning building.
-

- **If You Are Trapped in Debris**
 - Use a flashlight to signal your location to rescuers.
 - Avoid unnecessary movement.
 - Cover your nose and mouth.
 - Tap on a pipe or wall.
 - To avoid breathing dust, shout only as a last resort.
-

Make a plan

You should plan for the possibility of a terrorist incident at home, work, or on the road, and familiarize yourself with children's school emergency procedures.

Creating a Family Plan

- Plan how to contact family members in different situations.
 - Long-distance calls may be easier than local calls, so an **out-of-State contact** may be a better intermediary between family members.
 - Be sure every family member **knows the phone number** of the intermediary and has coins or a prepaid phone card.
 - Be patient if you have trouble getting through or the telephone system is down.
-

Emergency Information

- Find out what kinds of disasters are likely to occur in your area and how information about them will be spread (for example, emergency radio and TV broadcasts).
 - Call the local chapter of the American Red Cross for local emergency information.
-

Emergency Plans

- Ask about emergency plans at work, daycare, and school.
 - If no plan exists, consider volunteering to help create one.
 - Include your neighbors in your planning.
 - You will be better prepared if you think ahead and communicate with others in advance.
-

Evacuate or Shelter in Place

- You will not know in advance, so plan for both.
 - Monitor EAS broadcasts on local television, radio, or NOAA Weather Radio.
 - **Do exactly as directed.**
-

Deciding to Stay or Go

- Depending on your circumstances and the nature of the attack, the first important decision is whether to stay put or get away.
 - Use common sense and available information.
-

Staying Put (“Sheltering-in-Place”)

- There may be situations when it’s simply best to stay where you are and avoid uncertainty outside.
 - Take this action if you see large amounts of debris in the air, or if local authorities say the air is badly contaminated.
-

To “shelter in place”:

- Bring family and pets **inside**.
 - **Lock** doors, and **close** windows, air vents, and fireplace dampers.
 - **Turn off** fans, air conditioning, and forced air heating systems.
 - **Take your emergency supply kit** unless you have reason to believe it has been contaminated.
 - **Go into an interior room** with few windows, if possible.
 - **Seal** windows, doors, and air vents using plastic sheeting and duct tape.
 - **Seal gaps** to create a barrier between yourself and any contamination.
 - **Watch TV, listen to the radio, or check the Internet** often for official news and instructions.
-

Getting Away

- **Create an evacuation plan:**
 - **Plan places** where your family will meet, both within and outside of your immediate neighborhood.
 - Keep a **half tank of gas** in your car.
 - Become familiar with **alternate evacuation routes** and methods.
 - **Take your emergency supply kit** unless you believe it is contaminated.
 - **Lock** the door behind you.
 - Plan how you will care for your **pets** in an emergency. Store extra food, water, and supplies for your pet.
-
- **If time allows:**
 - Call or email your out-of-State contact and tell them where you are going.
 - If there is damage to your home and if you are instructed to do so, shut off water, gas, and electricity.
 - Leave a note telling others when you left and where you are going.
 - Check with neighbors who may need a ride.

- **Learn how and when to turn off utilities:**
 - Locate the shutoff valves.
 - Keep necessary tools near gas and water shutoff valves.
 - Teach family members to shut off the utilities.
 - **Do not attempt to turn the gas back on. A professional must do it.**

Make a Kit

Your disaster supply kit may need some additional supplies to help you through a terrorist incident, for example:

- Plastic sheeting and duct tape.
- Dust masks rated “N95” to protect from very small airborne hazards.

Water and Food: Keep at least a three-day supply.

Water

- One gallon per person per day, for drinking and sanitation.
- More is needed for nursing mothers, sick people, and in warm weather.
- Store water tightly in clean plastic containers.

Food

- Select nonperishable foods that need no preparation or cooking and little or no water.
- Pack a manual can opener and eating utensils.
- Choose foods your family will eat.

Basic Supplies:

- **Flashlight** and extra **batteries**.
- Battery-powered **radio** and extra **batteries**.
- Plastic **garbage bags**, ties, and toilet paper for personal sanitation.
- **First aid kit**.
- **Map** of the area for evacuation or for locating shelters.
- A **whistle** to signal for help.
- **Moist towelettes**.

Clothing and Bedding

- At least **one complete change of warm clothing** and shoes per person, including:
 - A jacket or coat
 - Long pants
 - A long sleeve shirt
 - Sturdy shoes
 - A hat and gloves
 - A **sleeping bag** or warm blanket for each person
-

Tools

- Emergency reference manual
- Mess kits, or paper cups, plates, and plastic utensils
- Cash or traveler's checks and change
- A nonelectric can opener, utility knife
- Paper towels
- Fire extinguisher: small canister, ABC type
- Tube tent
- Pliers
- Compass
- Matches in a waterproof container
- Aluminum foil
- Plastic storage containers
- Signal flare
- Paper, pencil
- Medicine dropper
- Shutoff wrench, to turn off household gas and water

Sanitation

- Toilet paper, towelettes
- Feminine supplies
- Personal hygiene items
- Plastic garbage bags, ties (for personal sanitation uses)
- Plastic bucket with tight lid
- Disinfectant
- Household chlorine bleach (Do not use scented or color-safe bleaches, or those with added cleaners).
 - Disinfectant – 9 parts water to 1 part bleach
 - Purify water – 16 drops per gallon of water

Important Family Documents

- Records such as insurance policies, identification, and bank account records.
- Keep copies in a waterproof, portable container.

CERTs and Terrorist Incidents

- Possibility is very low.
 - Your safety is the number one priority.
 - You should always do a thorough sizeup before taking any action.
 - If WMD is used, CERTs will be **very limited** in what they can do at the incident.
-

CERT Protocols for Terrorist Incidents

- Two key protocols:
 - Terrorist incidents are a "stop sign" for CERT members.
 - If you see any indicators of WMD, leave the area and notify authorities immediately.
- **Remember!** Do not use a cellular phone or two-way radio if you suspect an explosive device.

Self-Care During Terrorist Incidents

- Leave the area immediately.
- Follow basic decontamination procedures:
 - **Remove everything**, including jewelry. **Cut off clothing** normally removed over the head.
 - **Wash your hands** before using them to shower.
 - **Flush your entire body** with **cool** water.
 - **Blot dry** with an absorbent cloth.
 - Put on clean clothes.
 - **Report to responders for decontamination.**

Treating Others

- Do **not** attempt to treat victims in the contaminated area.
- Tell people who are leaving the area to:
 - Use the basic decontamination procedures.
 - Wait for responders who will perform complete decontamination.

Resources

- **What to Do at Work and at School** [http://www.ready.gov/text/work_school.html]
- **What To Do if You Are in a High-Rise Building** [<http://www.ready.gov/text/highrise.html>]
- **What To Do if You Are in a Vehicle** [<http://www.ready.gov/text/vehicle.html>]
- **Special Items You May Need** [http://www.ready.gov/text/special_needs_items.html]
- **The American Red Cross** [<http://www.redcross.org>]

Lesson Summary

Many of the preparedness steps for terrorist incidents are the same as those for natural disasters or other "human-caused" threats.

Lesson Overview

In a disaster, victims may need life-saving or life-sustaining help. As a CERT member, you may become a first responder because professional help is not immediately available.

Key Points:

In a disaster setting, CERT members may assist in providing immediate care for life-threatening injuries by:

- Performing triage and rapid treatment for victims.
 - Establishing medical treatment areas.
 - Performing head-to-toe assessment and treatment.
 - Managing disaster-related stress for themselves and victims.
-

Time Is Critical

When a disaster occurs—whether an earthquake, a flood, or a smaller event—trauma-related injuries often result.

The injuries can run the gamut from nonserious to life-threatening to fatal. For some, early intervention will make the crucial difference between life and death.

You Can Help

Following a disaster, neighborhood and workplace teams can respond more quickly to critical needs in their areas than professional responders. When professional responders do arrive, CERT members take direction from them and may be asked to assist them.

Your Goal

As a CERT member, your goal is to act safely to do the greatest good for the greatest number of victims. To do this, you need to be able to:

- Size up the situation to determine if it is safe to act.
- Triage victims quickly, identifying those with the most serious injuries.
- Treating those with life-threatening injuries first.

Understanding the potential for death due to injuries will help you prioritize victims' needs and your efforts.

Death From Trauma

Disaster trauma victims who die from their injuries can be divided into three categories:

1. Those who will die within **minutes** as a result of overwhelming and irreversible damage to vital organs.
2. Those who will die within **several hours** due to excessive bleeding.
3. Those who will die within **several days or weeks** from infection or multiple-organ failure (i.e., complications of the injury).

Understanding these phases can help you apply your training to do the greatest good for the greatest number of victims.

Preventing Death From Disaster Trauma

Research has shown that more than 40 percent of disaster victims in phases 2 and 3 could be saved by providing simple medical care.

Disaster Psychology

Disasters can have a psychological impact on CERT members and disaster victims.

There are steps that you can take to reduce your personal stress level and to help survivors handle traumatic stress.

Protecting Yourself

As a CERT member, protecting yourself must always be your first priority. Below are some important ways to protect yourself.

First, always wear your safety equipment, including:

- Work gloves.
- Goggles.
- Dust mask.
- Helmet.
- Boots.

The best type of mask is one labeled "N95," which will filter particles as small as 3 microns.

Latex Gloves for Protection

Second, when working with a victim:

- Wear latex gloves, goggles, and mask to protect against exposure to body fluids and blood-borne pathogens such as hepatitis and HIV.
- Be sure to change or sterilize gloves between victims. You'll learn more about changing and sterilizing gloves in the next lesson.

To save time, you can wear latex gloves under work gloves. Then, when you find a victim, you can just remove the work gloves and be ready to go.

Distance for Protection

Third, know when to stay away.

If there is evidence of chemical materials, do not approach! (For example, multiple victims gasping for air without an obvious reason could indicate chemical agents.) These situations are "stop signs" for CERTs. Leave the scene to avoid endangering yourself or spreading contamination.

Trained professionals with specialized equipment are needed to respond to these situations.

Lesson Summary

- As a CERT member, your goal is to stay safe and to do the greatest good for the greatest number of victims.
 - Some disaster victims who would otherwise die from trauma-related injuries can be saved by early treatment. While waiting for professional responders, trained CERT members can provide that crucial early treatment.
 - Don't try to apply the medical treatment skills covered in this course until you have completed the classroom training.
-

First Priority

There are three life-threatening conditions (sometimes referred to as the "killers") that always get first priority: obstructed airway, excessive bleeding, and shock.

As the name "killers" implies, anytime a victim presents one of these conditions, it requires immediate attention.

Important!

Life-saving techniques require indepth instruction and supervised practice to enable you to do them correctly.

Protect Yourself

Reminder: Always protect yourself. Whenever you perform disaster medical operations, remember to:

- Work with a buddy.
 - Do a good sizeup.
 - Wear safety equipment (gloves, goggles, mask, helmet, and boots).
 - Wear latex gloves.
 - Change or sterilize gloves between patients.
 - Avoid high-risk situations such as hazardous materials.
-

Obstructed Airway

In an unconscious or semiconscious victim—especially one lying on his or her back—the tongue may relax and block the airway. The tongue is the most common airway obstruction.

A victim who does not appear to be breathing must be attended to immediately. If an airway obstruction is suspected, you will need to attempt to open the airway to restore breathing.

Opening the Airway

To open the airway of a victim who appears to be unconscious, look, listen, and feel for air exchange by performing the steps below:

1. Shake the victim and shout, "Can you hear me?"
 2. If the person does not respond, place your palm on the victim's forehead.
 3. Place two fingers of the other hand under the victim's chin and lift the jaw while tilting the head back slightly.
 4. Place your ear over the victim's mouth and your hand on the victim's stomach and look at the victim's chest.
 5. Look for chest rise.
 6. Listen for breathing and feel for abdominal movement.
-

Two Tries, Then Move On To Help Others

In a disaster setting with many people needing help, your mission is to do the greatest good for the greatest number of people. You can't spend unlimited time trying to revive one victim.

- If breathing is not restored on the first try using the Head-Tilt/Chin-Lift method, try once more using the same technique.
 - If breathing cannot be restored on the second try, move on to the next victim whom you may be able to help. Unfortunately, when there are many more victims than helpers, CPR is too labor intensive.
-

Maintaining the Airway

If breathing is restored after one or two tries, the airway must be maintained in an open position with the head tilt. Options for maintaining an open airway when you go to help others include:

- Having a volunteer hold the head in place.
 - Placing soft objects under the victim's shoulders to slightly elevate the shoulders and keep the airway open.
-

Excessive Bleeding

The second life-threatening condition is excessive bleeding. If not controlled, excessive bleeding will result in:

- **Weakness.** Uncontrolled bleeding initially causes weakness.
 - **Shock.** If bleeding is not controlled, the victim will go into shock within a short period of time.
 - **Death.** An adult has about 5 liters of blood. Losing 1 liter can result in death.
-

Types of Bleeding

There are three types of bleeding depending on the type of vessel that is injured. The type of bleeding can usually be identified by how the blood flows:

Type of Bleeding	Description
Arterial	Spurting: Arteries transport blood under high pressure. Bleeding from an artery is bright red blood that spurts with every heartbeat.
Venous	Steady Flow: Veins carry blood under low pressure. Bleeding from a vein is a steady flow of darker blood.
Capillary	Oozing: Capillaries also carry blood under low pressure. Bleeding from capillaries oozes.

Controlling Bleeding

Three main methods are used to control bleeding:

- Direct pressure on the wound
- Elevation
- Pressure points

Direct pressure combined with elevation will control most bleeding.

Using Direct Pressure To Control Bleeding

Use these steps to control bleeding using direct pressure:

- **Step 1:** Put a clean dressing over the wound and press firmly.
 - **Step 2:** Use a pressure bandage, such as a triangle bandage, to maintain pressure on the dressing.
 - **Step 3:** Tie the ends of the bandage with a bow over the wound instead of a knot. The bow allows the bandage to be loosened later to reduce the pressure if the extremity becomes numb or turns blue and to check the wound for infection. Then, the bandage can be retied, saving time and supplies.
-

Using Elevation To Control Bleeding

Elevation is used in combination with direct pressure to control bleeding. To use this method:

- Elevate the wound above the level of the heart to help stop the bleeding.
 - Try to find a position that the victim can maintain with comfort.
 - If necessary, prop the limb up with nearby objects.
-

After Pressure and Elevation, Keep Checking

Direct pressure and elevation can take 5 to 7 minutes to completely stop the bleeding. Using a dressing and pressure bandage to maintain the pressure on the wound allows you to move on to the next victim. That doesn't mean you're done, however.

CERT members need to continue assessing the victim's status. If the victim's limb is turning blue or becoming numb below the bandage, the bandage should be loosened and retied over the wound with less pressure.

Using Pressure Points To Control Arterial Bleeding

A pressure point is where a major artery to an arm or leg crosses over a bone. By pressing firmly on a pressure point, you can slow or stop the flow of blood to the bleeding arm or leg.

Shock

The third life-threatening condition is shock, a disorder resulting from ineffective circulation of blood. Remaining in shock will lead to the death of:

- Cells.
- Tissues.
- Entire organs.

The body can compensate for blood loss and initially may mask the symptoms of shock. Therefore it is very important to evaluate patients for shock and to monitor their conditions continually.

Recognizing Shock

A victim may display one or more signs of shock. Several shock symptoms are fairly easy to identify. They include:

- Rapid, shallow breathing.
 - Capillary refill of greater than 2 seconds.
 - Failure to respond to a simple command, such as "Squeeze my hand."
-

Signs of Shock: Rapid Breathing

A victim whose breathing is rapid and shallow could be in shock. The person's breathing will sound like panting and will be more than 30 breaths per minute.

Signs of Shock: Slow Capillary Refill

A second sign of shock is slow capillary refill. In a person experiencing shock, the capillaries take longer than 2 seconds to refill and return the skin to normal color. The blanch test, as this technique is called, is used to check capillary refill time.

Signs of Shock: Failure to Respond

A third sign of shock is the victim's failure to follow simple commands. Shock can make a traumatized person appear:

- Restless, nervous, or agitated.
- Confused or dazed.
- Unaware of his or her surroundings.

Holding the person's hand and giving a simple command, such as "Squeeze my hand," is a good way to check a person's ability to respond.

Treating for Shock

If there is any reason to suspect shock, you should treat it immediately.

To treat shock:

1. Position the victim lying down, feet elevated 6-10 inches above the heart.
 2. Maintain an open airway.
 3. Control obvious bleeding.
 4. Maintain body temperature.
 5. Avoid rough or excessive handling.
 6. Don't give food or water initially because of possible nausea.
-

Lesson Summary

- Conditions that always get priority are obstructed airway, excessive bleeding, and shock.
- Use the Head-Tilt/Chin-Lift method to open the airway.
- Use direct pressure and elevation, then pressure points, as needed, to control bleeding.
- Keep shock victims warm and quiet, maintain body temperature, keep the feet elevated 6-10 inches above the heart, and maintain an open airway.

Treatment of these life-threatening conditions often occurs during the triage process.

Lesson Overview

In a situation with many casualties, CERTs use a process called “triage” to distinguish among:

- Those who need immediate care (tagged with an "I").
 - Those who can wait (tagged with a "D" for delayed).
 - Those who are dead (tagged "Dead").
-

What Is Triage?

Triage is a French term meaning "to sort." The goal of triage is to identify victims who are having problems with the three “killers”—obstructed airway, excessive bleeding, or shock—and to treat them immediately.

Triage usually begins at the incident site, as soon as victims are located. During triage, victims are:

- Evaluated for airway problems, excessive bleeding, and shock.
 - Sorted by those who need immediate treatment for the three killers and those who can wait until after others have been triaged.
-

Origin of Triage

Triage was initiated by the military. Military experience has shown that triage is especially effective in situations where:

- There are more victims than rescuers.
 - There are limited resources.
 - Time is critical.
-

Triage Categories

During triage, victims' conditions are evaluated and sorted into three categories:

Category	Description
Immediate (I)	Victim has life-threatening injuries (airway, bleeding, or shock) that demand immediate attention to save the person's life.
Delayed (D)	Injuries do not jeopardize the victim's life. The victim may need care, but it can be delayed while triaging other victims.
Dead	Not breathing after two attempts to open the airway. There is not time or resources to do CPR if others need immediate help.

Tagging and Moving

Every victim receives a tag of "I," "D," or "Dead" indicating the result of triage. All "I's" receive immediate attention for airway, bleeding, and shock problems. (Note: We have used "I," "D," and "Dead." During your classroom training, your instructors may teach you a tagging system used in your area.)

After triage, victims are taken to a medical facility, if available, or to an area that CERTs designated as a medical treatment area.

Triage Precautions

In conducting triage, you must be alert to your and your buddy's welfare as well as that of the victim. If you don't protect yourself, you can make the situation worse. Triage precautions include:

- Avoiding hazardous materials.
- Avoiding unsafe situations.
- Wearing your safety equipment.
- Wearing sterile gloves (latex or nonlatex) when treating victims.
- Changing or sterilizing gloves between victims.

Keeping Gloves Sterile

Each time that you handle a new victim, your latex gloves must be sterile, to avoid cross-contamination. There are two ways to ensure that your gloves are sterile:

- Changing gloves. Your disaster kit should include a box of latex gloves. If possible, change gloves between victims.
- Sterilizing gloves. When supplies are limited, it may not be possible to use a new pair of gloves for every victim. In this case, you can sterilize gloves between victims using **1 part bleach to 10 parts water**.

Safe Glove Removal

To avoid self-contamination, use the following method when changing latex gloves.

- Step 1. To remove the first glove, pinch the glove near the top edge.
 - Step 2. Roll the glove off while turning it inside out as it comes off.
 - Step 3. To remove the second glove, tuck two fingers inside the glove.
 - Step 4. Roll the glove off, being careful not to touch the outside of the glove. Be sure to dispose of gloves properly!
-

General Triage Procedures

The following six-step procedure is used to conduct triage.

- Step 1. Size up the situation.
 - Step 2. Conduct voice triage.
 - Step 3. Follow a systematic route.
 - Step 4. Triage and tag each victim "I," "D," or "Dead."
 - Step 5. Treat "I" victims immediately.
 - Step 6. Document triage results.
-

Step 1: Size Up the Situation

Before you begin, size up the situation:

- **Stop, look around, and listen.** Take the time to gather information, such as type of incident, number of victims, "lay of the land," and risk factors. You'll need this information to make decisions and develop plans for you and your buddy.
- **Think about your and your buddy's safety, capabilities, and limitations.** Decide if you will approach the scene.
- **Plan.** If you decide to approach, plan how you will do it.

Remember that sizeup is a continual process because conditions that affect your safety can change.

Step 2: Conduct Voice Triage

Begin sorting victims by calling out, "Emergency Response Team. If you can walk, come to the sound of my voice."

If there are survivors who can walk, they are "D's." Survivors who can walk should be directed to a designated safe location while you continue with triage.

It's important to keep ambulatory survivors in one area. If you and your buddy need assistance, you can ask the survivors to help. They may also provide useful information about the locations of other victims.

Step 3: Follow a Systematic Route to Victims

Now you're ready to start working with nonambulatory victims. To make sure that you don't miss anyone:

- Start where you stand.
 - Start with the closest victims.
 - Work outward in a systematic fashion.
-

General Triage Procedures (Continued)

Step 4: Triage and Tag Each Victim

Triage each victim. Treat immediates, and tag everyone using "I" (immediate), "D" (delayed), or "Dead." We'll discuss how to conduct triage shortly.

Remember also to triage and tag the walking wounded after triaging and tagging victims who were not able to walk to you and your buddy. They may have injuries that require your attention.

Step 5: Treat "I" Victims Immediately

An "I" victim needs immediate treatment for life-threatening conditions. Treat these victims for the three "killers" and tag as "I" before continuing with triage.

All "I" victims receive:

- Airway management to keep the airway open.
- Control of excessive bleeding.
- Treatment for shock.

Step 6: Document Triage Results

After you triage victims in an area, record the number of victims by triage tag and their location. This documentation will help responders when they arrive to:

- Identify the locations of victims.
- Deploy resources effectively.
- Estimate the number of casualties by degree of severity.

Conducting a Triage Evaluation

Triage involves three steps:

- Check airway/breathing.
 - Check bleeding/circulation.
 - Check mental status.
-

Step 1: Check Airway/Breathing

At arm's length from the victim, shake the person's shoulder and shout, "Can you hear me?" If the person does not respond, check breathing by opening the airway using the Head-Tilt/Chin-Lift method.

Look, listen, and feel for air exchange. If the victim still is not breathing, try again to open the airway. If the victim is not breathing after two tries, tag the victim "Dead" and move on to the next victim.

If the victim is breathing, check the victim's breathing rate:

- If breathing is faster than 30 breaths per minute, tag the victim "I." Maintain the airway, control bleeding, and treat for shock before moving to the next victim.
 - If breathing rate is below 30 per minute and normal, move to Step 2.
-

Step 2: Check Bleeding/Circulation

This step has two parts—controlling bleeding and checking circulation.

First, if the victim has severe bleeding, apply direct pressure and elevation to control the bleeding. Then tag as "I."

After controlling bleeding or if there is no severe bleeding, check circulation using the blanch test.

The Blanch Test

The blanch test is used to check how quickly capillaries refill. To perform this test:

- Press on an area of skin until normal skin color is gone. A good place to do this is the palm of the hand. The nail beds can also be used.
- Let go and time how long it takes for normal color to return.
- A capillary refill time of longer than 2 seconds is indicative of poor circulation and shock.

The blanch test is not valid in children. Mental status should be used as the main indicator of shock in children.

Step 3: Check Mental Status

Checking mental status is the next step in triage.

To check mental status, ask the victim to follow a simple command, such as "Squeeze my hand."

If the victim can follow a simple command, is breathing under 30 breaths per minute, and passes the blanch test, tag the person "D" for delayed. We know that this person does not have airway, circulation, or shock problems at the moment.

Summary

When performing triage:

- If the victim fails the test for one of the three "killers," the status is "I."
- If the victim passes all tests, he or she can wait for delayed treatment. Tag the person "D."
- Everyone gets a tag.

Remember, all "I's" get airway management, bleeding control, and treatment for shock before you and your buddy move to the next victim.

Developing Your Triage Skills

To be effective at triage, you will need to develop the ability to work quickly and efficiently.

- Time is critical in a disaster. You will not be able to spend much time with any single victim. Ideally, with practice, you should be able to complete a simple triage evaluation in 15 to 30 seconds.
- Performing efficiently and effectively means following standard procedures and avoiding triage pitfalls.

Practice, Practice, Practice!

An important component of developing quick and efficient triage skills is practice.

To develop and maintain your triage skills:

- First, complete the classroom CERT training to learn triage skills.
- Then, take advantage of local exercises as a means of developing and improving your triage skills.

Lesson Summary

This lesson presented the steps in conducting triage:

- Size up the situation.
 - Conduct voice triage.
 - Follow a systematic route to victims.
 - Evaluate and tag each victim by checking:
 - Airway.
 - Bleeding/Circulation.
 - Mental status.
 - Treat "I" victims immediately.
 - Document triage results.
-

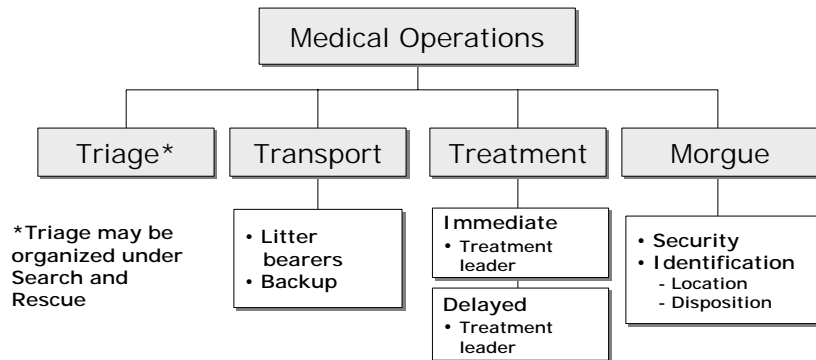
Lesson Overview

This lesson discusses important considerations in setting up, staffing, and running medical treatment areas. Disaster medical operations is divided into four major components.

- Triage.
- Transport.
- Treatment.
- Morgue.

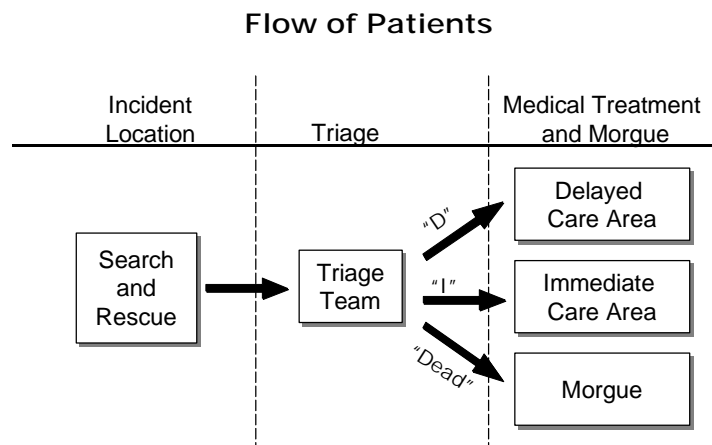
Organization

The chart below illustrates how the four medical operations components fit together organizationally.



Patient Flow

The diagram below illustrates how patients move through the medical operations components.



The Medical Treatment Area

The medical treatment area is the location where victims receive the most advanced medical care available at the scene.

If professional help is not available following a disaster, CERT medical operations personnel will establish the medical treatment area as soon as injured victims are confirmed. This includes:

- Selecting a site.
 - Setting up treatment areas.
-

Selecting a Site

The medical treatment area site should be:

- In a safe area, free of hazards and debris.
 - Close to the hazard zone.
 - Upwind and uphill from the hazard zone.
 - Accessible by transportation vehicles such as ambulances, trucks, and helicopters.
 - Expandable.
-

If Upwind Isn't Possible . . .

In an area near a large body of water, which is subject to onshore or offshore winds, it may not be possible to establish an upwind treatment site.

In this type of location, the treatment area should be established in an area close to the hazard zone and perpendicular to the wind direction.

Setting Up and Marking Areas

Three clearly marked medical operations areas should be established:

- Immediate care area ("I")
- Delayed care area ("D")
- Morgue ("Dead")

Each area should be marked with a sign, to match the tagging of victims: "I," "D," and "Dead." The entire area should also be protected and clearly delineated using a ground cover or tarp.

This marking system will make it easy for transporters to deliver tagged victims to the correct location.

Placement of Medical Treatment Areas

The immediate and delayed care areas should be relatively close to each other to allow:

- Verbal communication between workers in the two areas.
- Shared access to medical supplies, which should be stored in a central location.
- Easy transfer of patients whose status has changed.

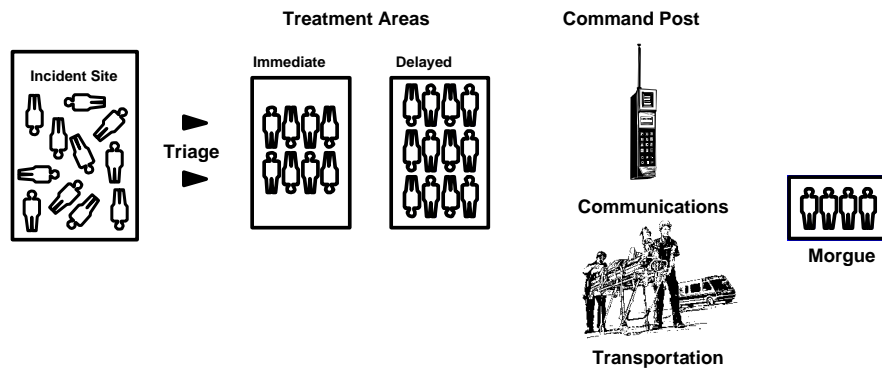
Placement of the Morgue

In locating the morgue, keep the following guidelines in mind:

- The morgue site should be located away from the treatment areas.
- The morgue should not be visible to patients in the treatment areas.
- The morgue must be kept secure.

Medical Operations Layout

The diagram below depicts one possible layout of the Medical Operations area.



Treatment Area Layout

Within the immediate and delayed treatment areas, patients should be positioned:

- In rows.
- Head-to-toe.
- 2 or 3 feet apart.

This configuration will provide effective use of space and available personnel. A worker who finishes one head-to-toe assessment is in position—simply by turning—to begin at the next patient's head.

Organizational Issues

To ensure that medical operations run efficiently, it is important that organizational planning occurs before disaster strikes.

Planning should address:

- Personnel assignments.
- Provision of area markings.
- Documentation.

Personnel Assignments

The CERT team will assign leaders to maintain control in each of the medical treatment areas.

In each treatment area, it is the responsibility of the treatment leader to:

- Ensure orderly victim placement.
- Direct assistants in conducting patient assessments.

Area Markings

The treatment areas and morgue must be clearly marked with:

- Signs to identify areas for victims tagged "I," "D," and "Dead." Then volunteer transporters can be told to take the "I" victims to the area with the "I" sign.
- Ground covers or tarps that clearly demarcate and protect the areas.

These materials must be prepared in advance so that they are available for immediate use.

Documentation

Thorough documentation of victims in the treatment areas and morgue is a must.

Documentation provides a valuable source of information for:

- Estimating the number of casualties by degree of severity.
- Effective deployment of resources.
- Tracking individual victims.

Public Health Considerations

When disaster victims are grouped together for treatment, public health becomes a concern.

To protect the public health and avoid the spread of disease, the following measures must be taken:

- Hygiene
- Sanitation
- Water purification (if necessary)

Maintaining Hygiene

Proper hygiene is crucial wherever medical operations take place—even under makeshift conditions.

Below are important measures that you can take to maintain hygiene. You should practice the following measures during every drill and exercise.

- Wash hands frequently.
 - Use soap and water.
 - Hand-washing should be thorough—at least 12 to 15 seconds.
 - Use an antibacterial scrub, if possible.
- Wear sterile gloves.
 - Change or disinfect gloves after examining and/or treating each patient.
 - Under field conditions, you can use rubber gloves that are sterilized between victims using diluted bleach (1 part bleach to 10 parts water).
- Wear a mask and goggles.
 - If possible, choose a dust mask that is rated "N95." This type of mask will filter particles as small as 3 microns.
 - Wear goggles to protect the eyes from splashed and airborne contaminants.

Maintaining Hygiene (Continued)

- Keep bandages and dressings sterile.
All open wounds must be covered to help prevent infection and the spread of disease.
 - Do not remove the overwrap from bandages and dressings until you are ready to use them.
 - After opening, use the entire bandage or dressing, if possible.
- Avoid contact with body fluids.
 - Gloves, mask, and goggles provide an important barrier.
 - If you come in contact with body fluids, thoroughly wash contaminated areas as soon as possible with soap and water or diluted bleach.

Maintaining Sanitation

Proper sanitation is a must in the medical treatment area—even during exercises. Proper sanitation helps prevent infection and the spread of disease.

To maintain sanitary conditions, medical personnel should:

- Put waste products such as latex gloves and dressings in plastic bags. Tie off the bags and label them "medical waste."
- Keep medical waste separate from other trash, and dispose of it as hazardous waste.
- Bury human waste.

Using Purified Water

Rescuers should not put anything on wounds other than purified water. Using other solutions, such as hydrogen peroxide, on wounds must be the decision of trained medical personnel.

Because potable water supplies are often in short supply or unavailable in an extreme emergency, it may become necessary to purify water before using it.

Methods for Purifying Water

When potable water is unavailable, water for drinking, cooking, and medical use should be purified using one of the following methods.

- Heat Method
 - Heat water to a rolling boil.
 - Boil for 1 minute.
- Water Purification Tablets
 - Iodine or chlorine tablets can be used to kill waterborne pathogens.
 - If using water purification tablets, follow the product directions provided with the tablets.
- Bleach
 - Use unscented liquid bleach.
 - Add 6 drops or $\frac{1}{8}$ teaspoon of bleach for each gallon of water.
 - Let the bleach/water solution stand for 30 minutes.
 - If the solution does not smell or taste of bleach, add another 6 drops of bleach and let the solution stand for 15 minutes before using.

Lesson Summary

In this lesson you learned that:

- Medical treatment areas should be close to, upwind, and uphill from the hazard zone; accessible by transportation vehicles; expandable; and clearly marked.
 - Personnel, equipment, and documentation should be carefully planned in advance.
 - Public health measures should include proper hygiene, sanitation, and water purification.
-

Lesson Overview

In previous lessons, you learned about triage and rapid treatment for life-threatening conditions. Many victims will have less critical injuries requiring basic care.

Common injuries that may require initial treatment by CERT members during a disaster include:

- Burns.
- Wounds.
- Fractures, sprains, and strains.
- Hypothermia.

Although CERTs cannot treat spinal injuries, they can take precautions if spinal injuries are suspected.

What Is a Head-to-Toe Assessment?

After all victims in an area have been through triage, head-to-toe victim assessments begin.

The objectives of a head-to-toe assessment are to:

- Determine, as clearly as possible, the extent of injuries.
- Determine what type of treatment is needed.
- Document injuries.

All victims should be assessed—even those who seem unhurt.

What Are You Looking For?

During an assessment, look for indicators that will help you determine the nature of the person's injury. Indicators may include:

- Bruising.
- Swelling.
- Severe pain.

You should also try to find out how a person has been hurt (called the "mechanism of injury") because it may point to probable injuries.

Talk to the Victim

With a conscious victim, assessment should be both hands-on and verbal. There are several important reasons to talk to the victim during assessment. Talk to the victim:

- To ask permission. You should always ask permission to conduct the assessment. The victim has the right to refuse your help.
- To calm the person. Telling the person who you are and what you are doing helps reduce anxiety.
- To obtain information. Ask the person to describe his or her symptoms and to tell you how the injury occurred.

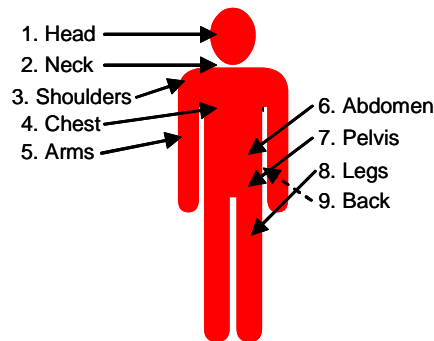
Assessment Guidelines

When conducting a head-to-toe assessment:

- Be alert. Pay careful attention, using all of your senses. Look, listen, and feel for anything unusual.
- Be thorough. Perform an entire assessment before beginning any treatment.
- Be cautious. Treat all unconscious victims as if they have a spinal injury. (You'll learn more about the signs of spinal injuries later in this lesson.)
- Be consistent. Conduct assessments systematically, the same way every time.

Assessment Sequence

Conduct the assessment from top to bottom, in the order shown. Check each body part for injuries to bones and soft tissue. Be sure to look at your hands after checking every part for evidence of patient bleeding.



Identifying Neck, Spine, and Head Injuries

A neck, spine, or closed head injury is an extremely serious injury. This type of injury must be identified immediately so that important precautions can be taken.

Closed Head Injury

A concussion-type injury to the head (as opposed to a head laceration).

Signs of a Neck, Spine, or Closed Head Injury

A victim who exhibits any of the following signs should be treated as having a neck, spine, or closed-head injury:

- Change in consciousness
- Inability to move one or more body parts
- Severe pain or pressure in the head, neck, or back
- Tingling or numbness in extremities
- Difficulty breathing or seeing
- Heavy bleeding, bruising, or deformity of the head or spine
- Blood or fluid in the nose or ears
- Bruising behind the ear
- "Raccoon" eyes (bruising around eyes)
- "Uneven" pupils
- Seizures
- Nausea or vomiting
- Mechanism of injury that could cause this type of injury (e.g., when a victim is found under collapsed building material)

Handling Neck, Spine, and Head Injuries

Your main objective with suspected injuries to the head, neck, or spine is to **do no harm**. To avoid further injury:

- Keep the head, neck, and spine in a straight line during the assessment and while treating other life-threatening injuries.
- Don't move the victim until you have done a head-to-toe assessment unless you and the victim are in immediate danger.

Materials for In-Line Stabilization

In-line stabilization is done to keep the head, neck, and spine in a straight line. Ideally, a backboard and cervical collar are used for this purpose.

In an emergency, standard equipment may not be available, and you may need to be creative. For example:

- A door, desktop, or building materials could be used as a backboard if moving the victim is necessary.
 - Towels, draperies, or sandbags could be used to stabilize the head on the board.
-

Burns

Burns may be caused by heat, chemicals, electrical current, or radiation. The severity of a burn depends on:

- The temperature of the burning agent.
- How long the victim was exposed.
- Area of the body affected.
- Size of the burned area.
- Depth of the burn.

Important! Use extreme caution around burn victims when there is no obvious cause for the burns. If the burns were caused by chemicals or radiation, you may be at risk.

Recognizing Burn Severity

The skin has three layers: Epidermis, dermis, and subcutaneous layer. Burns may affect one, two, or all three layers of skin.

Burn Classifications

Burns are classified into three degrees of severity, depending on the skin layers affected by the burn.

- First-degree burn

Skin Layer Affected	Symptoms
<ul style="list-style-type: none">▪ Epidermis (superficial)	<ul style="list-style-type: none">▪ Reddened, dry skin▪ Pain▪ Possible swelling

- Second-degree burn

Skin Layers Affected	Symptoms
<ul style="list-style-type: none">▪ Epidermis▪ Partial destruction of dermis	<ul style="list-style-type: none">▪ Reddened, blistered skin▪ Wet appearance▪ Pain▪ Possible swelling

- Third-degree burn

Skin Layers Affected	Symptoms
<ul style="list-style-type: none">▪ Complete destruction of epidermis and dermis▪ Possible subcutaneous damage	<ul style="list-style-type: none">▪ Whitened, leathery, or charred (brown or black)▪ Painful or relatively painless

Treating Burns

The objectives of treatment for burns are to:

- Cool the burned area
 - Protect the area and prevent infection
-

Burn Treatment: Cooling

The following methods can be used to cool a burn:

- Remove the victim from the burn source and put out flames.
- Remove smoldering clothing unless stuck to the skin.

If skin or clothing is still hot, cool them by immersing them in cool water for not more than 1 minute. Alternately, apply cool compresses wrung out in cool water. You can use soaked towels, sheets, or other cloths for this purpose.

Also, remove heated metal objects like watches and rings.

Burn Treatment: Avoiding Hypothermia

Use caution when applying compresses. Cooling a burn too rapidly can cause hypothermia in some victims—especially:

- Infants.
- Young children.
- Older persons.
- Victims with severe burns.

To avoid hypothermia in these victims, do not cool more than 15 percent of the body surface area (the size of one arm) at one time.

Burn Treatment: Covering

Cover the burn loosely with sterile dressings to:

- Keep air out.
- Prevent infection.

Local protocols will dictate whether dry or moist dressings should be used.

Burn Treatment: More Do's and Don'ts

When treating burns:

Do's:	Don'ts:
<ul style="list-style-type: none">▪ Do elevate burned extremities higher than the heart.▪ Do treat all victims of third-degree burns for shock.	<ul style="list-style-type: none">▪ Do not use ice. Ice causes vessel constriction.▪ Do not apply antiseptics, ointments, or other remedies. Such preparations will hold heat in the burn area and will have to be scrubbed off later.▪ Do not remove shreds of tissue or break blisters.▪ Do not remove adhered particles of clothing. Instead, cut the clothing around the burn and leave the burned-in portion in place.

Wounds

Wounds—including lacerations, amputations, and impaled objects—are common after disasters.

The objectives of wound treatment are to:

- Control bleeding.
- Prevent secondary infection.

You have already learned techniques to control bleeding. This section of the lesson focuses on preventing infection by cleaning and bandaging.

Wound Care: Cleaning

To clean dirt from a wound:

- Irrigate the wound with water.
- Flush the wound with a mild soap-and-water solution.
- Irrigate the wound again with water.

In an emergency situation, a bulb syringe, like a turkey baster, can be used for irrigation.

Never scrub a wound!

Wound Care: Bandaging

Sterile dressings and bandages are used to keep a wound clean after irrigating and controlling bleeding.

To treat a wound:

- Place a sterile dressing directly over the wound and secure it in place with a bandage.
- If the wound is still bleeding, use a pressure bandage to help control bleeding without interfering with circulation.

Wound Care Followup

Wound care followup depends on whether there is continued active bleeding.

- If there is no active bleeding, remove the dressing, flush the wound, and check for signs of infection at least every 4 to 6 hours.
- If the dressing is soaked with blood, redress over the existing dressing. Maintain pressure and elevation to control bleeding.

Signs of Possible Infection

- Swelling around the wound site
- Discoloration
- Discharge from the wound
- Red striations from the wound site

Treating Amputations

When treating amputations, the main objectives are to control bleeding, treat for shock, and save tissue parts.

If the severed body part can be located, you should:

- Wrap the severed part in a clean cloth and place it in a plastic bag, if available.
- Keep the severed part cool.
- Keep the severed part with the victim.

Treating Victims With Impaled Objects

In a disaster, you may encounter victims who have foreign objects lodged in their bodies—usually as the result of flying debris.

The most important thing to remember about treating a victim with an impaled object is don't try to remove the object.

Treatment for an Impaled Object

- Immobilize the affected body part.
 - Don't try to move or remove the foreign object unless it is obstructing the airway.
 - Try to control bleeding at the entrance wound without placing undue pressure on the foreign object.
 - Clean and dress the wound. Wrap bulky dressings around the object to keep it from moving.
-

Fractures, Dislocations, Sprains, and Strains

In a disaster, victims often sustain injuries to bones, joints, and the muscles and ligaments that surround them.

- Fracture
 - Dislocation
 - Sprain
 - Strain
-

Fracture

A fracture is a broken bone. A fracture may be closed or open, displaced or nondisplaced.

- **Closed fracture:** A fracture in which the broken bone does not puncture the skin.
 - **Open fracture:** A fracture in which the bone protrudes through the skin. With this type of injury, the wound allows contaminants to enter the fracture site.
 - **Displaced fracture:** A fracture in which the bone is no longer aligned. If the limb is angled, there is a displaced fracture.
 - **Nondisplaced fracture:** A fracture in which the bone remains aligned. A nondisplaced fracture can be hard to identify. The main signs are pain and swelling.
 - **A dislocation** is an injury to the ligaments around a joint that is so severe that it permits the bone to separate from its normal position in the joint.
-

Sprains and Strains

A sprain involves stretching or tearing of ligaments at a joint. A sprain is usually caused by stretching or extending the joint beyond its normal limits.

A sprain is considered a partial dislocation. The bone either remains in place or falls back into place after the injury.

A **strain** involves stretching and/or tearing of muscles or tendons. Strains most often involve the muscles in the neck, back, thigh, or calf.

General Treatment

Use the following techniques when treating fractures, dislocations, sprains, and strains:

- Remove restrictive clothing, shoes, and jewelry that could act as tourniquets during swelling.
- Immobilize the injury and the joints immediately above and below the injury.

If you're not sure of the type of injury, treat it as a fracture.

Treating Open Fractures

Open fractures are high-priority injuries because of the risk of severe bleeding and infection. Treat them quickly and check them frequently.

Below are important do's and don'ts for treating open fractures.

Do's	Don'ts
<ul style="list-style-type: none">▪ Do cover the wound with a sterile dressing.▪ Do splint the fracture without disturbing the wound.▪ Do place a moist dressing over the bone end to keep it from drying out.	<ul style="list-style-type: none">▪ Don't draw the exposed bone ends back into the tissue.▪ Don't irrigate the wound.

Treating Dislocations, Sprains, and Strains

Dislocations, sprains, and strains can be difficult to identify. The signs are often similar to those of a fracture. Symptoms may include:

- Tenderness at the site of the injury.
- Swelling and/or bruising.
- Restricted use or loss of use.

Treat these injuries as fractures by immobilizing the injury. Don't try to relocate a suspected dislocation!

Splinting

Splinting is used to immobilize an injured limb. Follow these basic guidelines for splinting:

1. Support the injured area above and below the site of the injury.
 2. If possible, splint the injury in the position that you find it.
 3. Don't try to realign bones.
 4. Immobilize above and below the injury.
 5. After splinting, check for proper circulation (color, warmth, and sensation).
-

Splint Materials

A variety of materials can be used for splinting, including:

- Rigid materials: Cardboard, board, metal strip, folded magazine or newspaper, or other item.
- Soft materials: Towels, blankets, pillows, or other soft items.
- Anatomical splint: An adjacent unfractured bone such as the adjacent finger or leg.

Attaching a Splint

When applying a splint:

- Use soft materials to fill the gap between the splinting material and the body part.
- Tie the splinting material in place with bandaging materials or soft cloths.

Splinting Examples

- Cardboard splint: The edges of the cardboard are turned up to form a "mold" in which the injured limb can rest.
- Towel splint: A towel is rolled up and wrapped around the limb, then tied in place.
- Pillow splint: A pillow is wrapped around the limb and tied.
- Anatomical splint: A fractured limb is immobilized by tying it at intervals to the unfractured limb.

Hypothermia

Hypothermia occurs when the body's temperature drops below normal. Hypothermia may be caused by:

- Exposure to cold air or water.
- Inadequate food combined with inadequate clothing and heat—especially in older people.

Hypothermia can occur in a matter of minutes. It is a concern for people exposed to cold air or cold water.

Symptoms of Hypothermia

Primary signs and symptoms:

- Body temperature of 95°F (37°C) or less
- Redness or blueness of the skin
- Numbness accompanied by shivering

Secondary signs and symptoms:

- Slurred speech
- Unpredictable behavior
- Listlessness

Treating Hypothermia

Treat victims who are at risk for hypothermia by warming and protecting them:

- Remove wet clothing and wrap the victim in a blanket or sleeping bag that covers the head and neck.
- Protect victims from the weather. Don't let them walk around, even if they seem fully recovered.
- Provide warm, sweet drinks and food if the victim is conscious and coherent. Do not offer alcohol or massage.

Place an unconscious victim in the recovery position (lying on his or her side with knees drawn up).

Lesson Summary

- After all victims have been triaged, assess each victim from head to toe. Complete the assessment before beginning treatment.
 - For suspected head, neck, and spinal injuries, use inline stabilization to keep the spine in a straight line.
 - Treat burns by cooling and covering.
 - Treat wounds by controlling bleeding, cleaning, and bandaging.
 - Treat fractures, dislocations, sprains, and strains by immobilizing—usually splinting.
 - Treat hypothermia by warming and protecting.
-

Lesson Overview

During a disaster, both survivors and helpers may experience disaster-related stress. By understanding the possible effects of these stressful events and the steps to take to cope with or lessen their effects, CERT members can take better care of themselves and the people that they are helping.

Before working in a disaster, it is helpful for CERT members to know about:

- Vicarious trauma.
- Steps to reduce personal stress.
- Ways for CERT team members and leaders to reduce stress.
- Survivor reactions.

Personal Stress Reduction

Working in a disaster can expose you to people's pain, suffering, loss, and grief. There is also the possibility that you may have suffered losses. Vicarious trauma is a potential occupational hazard for CERT workers, and the stress can affect their overall effectiveness.

There are three important measures that you can take to protect yourself from the effects of vicarious trauma:

- Don't overidentify with survivors.
- Be alert to signs of disaster trauma in yourself.
- Take steps to reduce stress.

Don't Overidentify

First, as you interact with survivors, it is very important to maintain psychological distance.

As you work with and listen to survivors, you will probably have your own feelings and thoughts about their situation. As you listen to and respond to survivors, try not to overidentify with them and take on their feelings as your own. Doing so can increase your own stress and reduce your overall effectiveness.

Recognize Signs of Trauma

Second, monitor yourself for signs of disaster-related trauma. By being alert to your reactions and state of mind, you can help to alleviate your stress.

Personal Stress Reduction (Continued)

Signs of Disaster Trauma

The following types of psychological and physiological responses may be observed in rescuers after a disaster.

Psychological Symptoms

- Irritability or anger
- Self-blame or the blaming of others
- Isolation and withdrawal
- Fear of recurrence
- Feeling stunned, numb, or overwhelmed
- Feeling helpless
- Mood swings
- Sadness, depression, and grief
- Denial
- Concentration and memory problems
- Relationship conflicts and marital discord

Physiological Symptoms

- Loss of appetite
- Headaches or chest pain
- Diarrhea, stomach pain, or nausea
- Hyperactivity
- Increase in alcohol or drug consumption
- Nightmares
- Inability to sleep
- Fatigue or low energy

Reduce Stress

The third way to manage the effects of disaster trauma is to take action to reduce stress.

Only you can determine what strategies will work for you. If you make the effort to identify your personal stress reducers before an incident occurs, you will be able to better apply them in a time of crisis.

Stress Reducers

You can also practice reducing stress by attending to your physical, emotional, psychological, and mental health needs in your everyday life.

The following approaches may help you reduce your stress levels in your everyday life.

Meet Your Physical Needs

- Get enough sleep.
- Exercise.
- Eat a balanced diet.
- Balance work, play, and rest.

Meet Your Emotional Needs

- Connect with others.
- Allow yourself to receive as well as give.

Meet Your Psychological and Spiritual Needs

- Use spiritual resources.
- If necessary, be willing to talk to mental health professionals.

Team Strategies for Stress Reduction

The CERT team organization provides psychological support for workers facing disaster trauma, and the CERT Team Leaders need to be proactive in taking steps with team members.

Strategies by which a Team Leader can help members reduce stress fall into four main areas:

- Training and communication
- Teamwork
- Pacing
- Nutrition

Training and Communication Strategies

The Team Leader can use strategies before, during, and after an incident to reduce CERT workers' stress.

- Training: Provide predisaster stress management training to all CERT personnel.
 - Briefings: At the start of an incident, brief CERT personnel about what they may see and what their emotional responses may be.
-

Team Strategies for Stress Reduction (Continued)

Teamwork Strategies

The Team Leader should emphasize the team aspects of CERT.

- **Team focus:** Point out that working together and looking out for each other is an important aspect of combating stress.
 - **Team sharing:** Encourage team members to share the workload and the emotional load. Team sharing can help defuse pent-up emotions.
-

Pacing Strategies

Pacing helps workers deal with the stress of disaster work.

- **Breaks:** Encourage rescuers to rest and regroup, to avoid becoming overtired. Mental and physical fatigue will reduce workers' effectiveness and may result in unsafe acts. Have workers take breaks away from the incident area.
 - **Rotation:** Rotate teams for breaks, giving them time to talk about their experiences. Rotate teams from high-stress to low-stress duties when possible.
 - **Gradual phase-out:** Phase workers out of the response effort gradually, moving them from high- to low-stress work before they leave.
 - **Nutrition:** CERT members should take breaks to drink water and eat healthy foods like fruits and granola bars. They should avoid excessive caffeine and refined sugar products. Maintaining a healthy, balanced diet helps maintain alertness.
-

Working With Survivors' Trauma

A disaster has a psychological impact on survivors. As a CERT worker, you need to understand potential survivor reactions.

Understanding survivors' reactions will help you to reduce your own stressors and improve your ability to respond.

Emotional Phases of a Crisis

Some research studies have indicated that survivors go through emotional phases following a disaster.

- **Impact phase:** In the impact phase, survivors do not panic. They may, in fact, show no emotion.
 - **Inventory phase:** The inventory phase immediately follows the event. In this phase, survivors assess damage and try to locate other survivors. Routine social ties tend to be discarded in favor of the more functional relationships required for initial response activities, such as search and rescue.
 - **Rescue phase:** In the rescue phase, emergency services personnel—including CERTs—are responding. Survivors are willing to take direction from these groups without protest. CERT helmets and vests are an important means of identifying yourself as part of the response effort during this phase.
 - **Recovery phase:** During the recovery phase, victims begin to realize that their lives may never be the same as before the disaster. They are likely to become angry and pull together **against** their rescuers.
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Traumatic Stress

Traumatic stress may affect a survivor in three major areas:

- Cognitive Functioning
 - Physical Health
 - Interpersonal Relationships
-

Impact on Cognitive Functioning

Those who have suffered traumatic stress may:

- Act irrationally.
 - Have difficulty making decisions.
 - Act in ways that are out of character for them.
 - Have difficulty retrieving or sharing memories.
-

Impact on Physical Health

Traumatic stress can cause a wide range of physical symptoms, such as:

- Chills, thirst, twitches, and muscle tremors.
 - Fatigue, dizziness, weakness, and fainting.
 - Nausea and headaches.
 - Elevated blood pressure, rapid heart rate, and chest pain.
-

Traumatic Stress (Continued)

Impact on Interpersonal Relationships

Those who survive traumatic stress may undergo temporary or long-term personality changes that make interpersonal relationships difficult.

Mediating Factors

A number of factors may affect the strength and nature of an individual's reaction to a traumatic crisis. Mediating factors include:

- **Prior experience with the same or a similar event.** The emotional effect of multiple events can be cumulative, leading to greater stress reactions.
 - **Intensity of the disruption in the survivor's life.** The more the survivor's life is disrupted, the greater his or her psychological and physiological reactions may become.
 - **Meaning of the event to the individual.** The more catastrophic the victim perceives the event to be, the more intense will be the stress reaction.
 - **Emotional well-being of the individual and the resources that he or she has for coping** (especially social resources). People who have had other recent traumas may not cope well with additional stresses.
 - **Elapsed time since the event.** The reality of a traumatic event takes time to "sink in."
-

Working With Survivors' Trauma

When working with survivors, you will see a range of responses that will vary from person to person. As you work with survivors, keep in mind:

Don't take survivors' attitudes personally!

The responses that you see will be part of the psychological impact of the event. A survivor's negative response may not relate to anything that you have done or have not done.

The CERT Psychological Role

As a CERT member, your on-scene psychological role is to stabilize the incident scene by stabilizing individuals.

The following are four ways that you can help stabilize an incident scene:

- Assess the survivors for injury and shock.
 - Involve uninjured people in helping.
 - Provide support by listening and empathizing.
 - Help survivors connect to natural support systems.
-

Assessing Survivors for Injury and Shock

First, address any medical needs that the victim has.

As you learned in earlier lessons, life-threatening conditions—including shock—are identified during triage and treated immediately. Other medical needs are identified during the head-to-toe assessment and should also be treated.

Involving Uninjured People in Helping

Focused activity helps to move people beyond the initial impact of the event.

Giving survivors constructive jobs to do, such as running for supplies, is a good way to channel their energies in a positive direction.

Providing Support

Provide support to victims by listening and empathizing.

- Listen to them talk about their feelings and their physical needs. Victims often need to talk about what they've been through, and they want a listener.
 - Empathize with victims. Victims want to know that someone else shares their feelings of pain and grief. Show by your responses that you hear their concerns.
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What Not To Say

When listening to and empathizing with trauma survivors, avoid the following types of responses. Although such phrases are meant to comfort the survivors, they do not show an understanding of the person's feelings. These types of responses could elicit a strong negative response or could distance the survivor from you. (And remember, it is okay to apologize if a survivor reacts negatively to something that you said.)

What Not To Say (Continued)

Avoid Saying:

"I understand."	In most situations, we cannot understand unless we have had the same experience.
"Don't feel bad."	The survivor has a right to feel bad and will need time to feel differently.
"You're strong." "You'll get through this."	Many survivors do not feel strong and they question if they will recover from the loss.
"Don't cry."	It is okay to cry.
"It's God's will."	Giving religious meaning to an event to a person that you do not know may insult or anger the person.
"It could be worse." "At least you still have..."	It is up to the individual to decide whether things could be worse.

Connecting to Support Systems

An important way to help stabilize an incident scene is to help survivors connect to natural support systems. Support systems may include:

- Family.
 - Friends.
 - Clergy.
 - Mental health professionals.
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Working With Bereaved Family Members

As a CERT member, you may sometimes be called upon to interact with family members in relation to the death of a loved one.

Managing the Death Scene

Below are some guidelines for interacting with family members about the death of a loved one:

- Cover the body and treat it with respect. Wrap mutilated bodies tightly.
- Have one family member look at the body. Ask the individual to decide if the rest of the family should see it.
- Allow the family to spend time with the deceased. Stay close by, but don't watch. Try to distance yourself emotionally.
- Let the family grieve. Don't try to comfort them out of a need to alleviate your own discomfort.

Informing Family Members of a Death

If the family does not know of the death of their loved one, you may be called upon to tell them. When informing the family:

- Separate them from others in a quiet, private place.
- Have them sit down, if possible.
- Make eye contact and use a calm, kind voice.
- Tell them about the death using the following words: "I'm sorry, but your family member has died. I am so sorry."

Lesson Summary

- To limit the effects of vicarious trauma on yourself, don't overidentify with survivors, monitor your own reactions, and use stress reducers that work for you.
 - Traumatic stress may affect a survivor's cognitive functioning, physical health, and interpersonal relationships.
 - When working with survivors, your role is to stabilize the incident scene by stabilizing individuals.
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Why Do We Train for Light Search and Rescue?

When disaster strikes, everyone wants to help. As a CERT member, you will be prepared to assist in a safe and effective manner.

- Disaster survivors may need help, but untrained spontaneous rescuers can place themselves in dangerous situations and become victims.
- CERT members are trained to size up the situation to determine the risk involved. CERT member safety is always the first priority when determining if rescuing others should be attempted.

CERT Search and Rescue Overview

As a CERT member, you will be trained to assist in light search and rescue. Light search and rescue means:

- Making rescue decisions based on two objectives: To protect rescuer safety and to rescue the greatest number of people in the shortest amount of time.
- Rescuing lightly trapped victims first.
- Avoiding damaged structures or situations that are clearly unsafe to CERT members.

Components of Search and Rescue

CERT search and rescue has three components:

- Sizeup
- Search Operations
- Rescue Operations

Sizeup

You—the rescuer—are the most important person in a rescue attempt. Effective sizeup helps you protect yourself.

Sizeup is the information-gathering and decisionmaking process for deciding **whether** to attempt a rescue and **how** to proceed.

Components of Search and Rescue (Continued)

Search Operations

In locating potential victims, you need to use search techniques that:

- Protect your safety.
 - Are systematic and thorough.
 - Avoid duplication of effort.
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Rescue Operations

Rescue involves three main functions:

- Creating a safe environment
 - Triaging or stabilizing victims
 - Removing victims
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Rescuer Safety

CERT rescuers perform only light search and rescue, avoiding heavily damaged structures. Regardless of the severity of structural damage, rescuer safety must be the primary concern.

The two most frequent causes of rescuer deaths are:

- Disorientation.
 - Secondary collapse.
-

Safe Practice 1: Use Protective Equipment

Always wear personal protective equipment, including:

- Gloves.
- Goggles.
- Dust mask.
- Helmet.
- Work boots.

The primary cause of rescuer problems after working in a structural collapse is from breathing dust. A dust mask is **essential!**

Safe Practice 2: Work as a Team

Successful search and rescue depends on teamwork! When performing search and rescue:

- **Use a buddy system.** Always work in pairs, and have a third person available to act as a runner.
 - **Have backup teams available.** Having backup teams allows teams to rotate, prevents fatigue, and ensures that help is available if a team gets into trouble. All teams need to drink fluids and eat to keep themselves fresh.
-

Safe Practice 3: Put Rescuer Safety First

Rescuer safety always has top priority. When considering a search and rescue attempt:

- Conduct a thorough sizeup.
 - Make rescuer safety the number one priority in any decision to attempt a rescue.
 - Never enter a structure that you determine has heavy damage.
 - Limit the amount of time that CERTs spend in moderately damaged buildings.
 - Never search an area covered by water.
-

Safe Practice 4: Be Alert for Hazards

Sizeup is an ongoing process. Look up, down, and all around for safety hazards. Before entering a building, evaluate it from all sides. Constantly reevaluate the situation to identify hazards and changing conditions that could compromise your safety, such as:

- Power lines.
 - Natural gas leaks.
 - Hazardous materials.
 - Sharp objects.
 - Overhead objects that could fall.
 - Holes in flooring.
 - Water.
 - Smoke.
-

Search and Rescue Sizeup

Effective sizeup is crucial when performing search and rescue operations.

Sizeup Step 1: Gather Facts

Accurate fact-gathering must precede damage assessment. During this step, you'll need to consider such factors as:

- Time and day.
 - At night, more people will be in their homes, so the greatest need for search and rescue will be in residential settings. During the day, people will be at work, so the need will be greater in commercial buildings.
 - During evenings and on weekends, availability of some emergency services may be restricted.
 - The amount of daylight available may affect search and rescue operations.
 - Type of structure.
 - The purpose for which the structure was designed may indicate the likely number of victims and their locations (e.g., an apartment building vs. a warehouse).
 - Some types of construction (e.g., mobile homes, unreinforced brick) are more susceptible to damage than others.
 - Occupancy.
 - Is the structure occupied?
 - If so, how many people are likely to be in the building?
 - Where are they likely to be located?
 - Are there special considerations (e.g., children, elderly, disabled)?
 - Weather.
 - Severe weather may affect both victims and rescuers. It can hamper rescue efforts, limit the time period during which search and rescue can occur, and affect how long trapped victims can survive.
 - Hazards.
 - Identifying other potential hazards in the general and immediate areas is important to search and rescue efforts.
 - Time lost trying to locate and shut off utilities can increase loss of life.
 - CERTs should never undertake search and rescue if there are indications of terrorism (biological, chemical, radiological, or secondary explosive devices). Leave the area immediately!
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Search and Rescue Sizeup (Continued)

Sizeup Step 2: Assess and Communicate Damage

The CERT mission changes according to the level of structural damage.

- Light damage
 - Superficial damage
 - Broken windows
 - Fallen or cracked plaster
 - Minor damage to interior contents

CERT mission: Locate, triage, and prioritize removal of victims.

- Moderate damage
 - Visible signs of damage
 - Decorative work damaged or fallen
 - Many visible cracks in plaster
 - Major damage to interior contents
 - Building still on foundation

CERT mission: Locate, triage, and immediately evacuate victims to a safe area.

Minimize the number of rescuers inside the structure.

- Heavy damage
 - Partial or total collapse
 - Tilting
 - Obvious structural instability
 - Building off foundation

CERT mission: Secure the building perimeter. Warn others of the danger in entering the building. Do not enter the building under any circumstances!

Completing the Damage Assessment

When completing a damage assessment for search and rescue:

- Be sure to do a "lap around" and look at all sides of the building.
- Consider probable amounts of damage based on the type and age of construction.
- If in doubt about the level of damage, err on the safe side: Assume the heavier level of damage.

Be sure to communicate your findings to the CERT command post or responding agencies.

Search and Rescue Sizeup (Continued)

Sizeup Step 3: Consider Probabilities

Considering what probably will—or could—happen is of critical importance to search and rescue teams. During sizeup, the team needs to identify potentially life-threatening hazards. Think about:

- How stable the situation really is.
 - What else could go wrong.
 - How these probabilities, if they occurred, would affect search and rescue operations.
-

Sizeup Step 4: Assess Your Situation

The next step is to assess your situation, drawing on everything learned in the previous steps. Your assessment should determine:

- Whether the situation is safe enough to continue.
 - The risks faced by rescuers if they continue.
 - Resource requirements for safely conducting the operation.
 - Resource availability.
-

Sizeup Steps 5 and 6: Establish Priorities and Make Decisions

Next, you will need to prioritize and make decisions about the tasks before you. These steps will be guided by:

- The underlying CERT priorities.
- Your team's evaluation of the current situation.

Resources should be deployed to do the most good while ensuring CERT member safety.

Tasks that involve removing known dangers must be done first—before beginning the search or the rescue. For example, turning off leaking gas from outside the building should be done before searching the building.

Sizeup Step 7: Develop Action Plans

During this step, the Team Leader will decide specifically how personnel and other resources will be deployed and how the team will proceed with the search and rescue operation.

Because incidents requiring search and rescue operations are often somewhat complex, it may be helpful to develop a simple written plan.

Written notes can help focus the operation and will provide documentation that your team can share with responding agencies.

Search and Rescue Sizeup (Continued)

Sizeup Steps 8 and 9: Take Action and Evaluate Progress

Sizeup is a continual process. As the search and rescue team takes action, ongoing evaluation is crucial for maintaining a safe environment.

The information gained through evaluation needs to be fed back into the decisionmaking process so that priorities and action plans can be revised when needed.

Lesson Summary

- CERT search and rescue includes initial sizeup, search operations, and rescue operations.
- The goals of CERT search and rescue are to protect rescuer safety and to rescue as many victims as possible as quickly as possible.
- Search and rescue teams protect rescuer safety by wearing personal protective equipment, working as a team, putting rescuer safety first, doing ongoing sizeup, and remaining alert to changing situations.

Search Begins With Sizeup

The first step in a search is to conduct a sizeup of the exterior of the building to determine if the building has light, moderate, or heavy damage. During this sizeup process, you:

- Gather more information about occupancy and danger (hazardous materials, etc.).
 - Correct outside problems (turn off gas if there is a leak, etc.).
 - Determine if you will enter the building.
 - Determine a plan of action for the search.
-

Talking to Bystanders

As part of the sizeup, you may need to talk to bystanders or people who are familiar with the structure to obtain information that will assist in planning.

Remember, though, that bystanders may be confused by the event. They may exaggerate numbers or may have inaccurate memories of what has transpired.

Search Methodology

Search operations involve using an effective search methodology, based on the sizeup, to locate potential victims.

An effective search methodology:

- Is systematic and thorough.
 - Avoids unnecessary duplication of effort.
 - Documents search results.
-

Search Methods

Search and rescue personnel use the following methods in locating victims and documenting results:

- Call out to victims.
 - Use a systematic search pattern.
 - Stop frequently to listen for noise, such as tapping.
 - Triangulate.
 - Mark entrances to searched areas to provide records of the search results.
 - Report results.
-

Search Methods (Continued)

Call Out to Victims

Begin the search by calling out to victims:

- Shout something like, "If anyone can hear me, come to the sound of my voice." Repeat the call a number of times to allow survivors to locate you and respond.
- If any victims respond, give them further directions, such as "Stay here" or "Wait outside," depending on the condition of the building.

You should also ask the responding victims for any information that they may have about the building or other victims who may be trapped.

When Talking to Victims

Victims who respond to your voice may be in shock and confused. When giving them directions:

- Look directly at the victim.
- Speak in short sentences.
- Keep directions and questions simple like "Go outside by the large tree." "Stay here." "I may need your help." "How many others are in the building?" "Where are they?"

Use a Systematic Search Pattern

To ensure that all areas of the building are covered, it is important to search the area systematically, using a consistent search pattern.

Examples of systematic search patterns include:

- Bottom-up/top-down.
- Right wall/left wall.

Following a pattern is very important in poorly lit areas. If you must leave the building, turn around and reverse your search to get to your starting point.

Stop Frequently To Listen

Periodically stop all movement and listen for sounds that could lead you to trapped victims, such as:

- Tapping.
 - Movement.
 - Voices.
-

Search Methods (Continued)

Triangulate

Triangulation is an approach that enables rescuers to view a single location from several perspectives. To triangulate:

- Three rescuers form a triangle around an area where noise is heard or victims may be located.
 - Each rescuer directs a flashlight toward the area.
 - The lighting from different directions will eliminate shadows that could otherwise hide victims.
-

Mark Searched Areas

Search and rescue teams should use a marking system to indicate that a team has entered a building and to document the results of their search when they leave that building.

Marking systems are used to:

- Indicate rescuer location.
 - Prevent duplication of search efforts.
 - Document search results.
-

Report Results

CERT search and rescue teams should keep complete records, including:

- Removed victims.
- Victims who remain trapped or are dead.

All information should be reported to emergency services personnel when they reach the scene.

Lesson Summary

- Search should begin with a sizeup of the building interior.
 - Effective search methods include calling out, using a systematic pattern, listening for victim sounds, triangulation, marking searched areas, and reporting results.
-

Lesson Overview

Two major efforts in rescue operations involve moving debris and moving victims.

To achieve the goals of CERT rescue operations, rescuers need to create a safe environment by:

- Following standard safety precautions.
- Using proper techniques for moving debris and victims.

Working Within Your Limits

Many volunteers have been injured or killed because they did not pay attention to their own physical limitations and level of mental fatigue.

During lengthy search and rescue operations, it is important to take breaks to:

- Eat.
- Drink fluids.
- Rest and relax.

Taking care of yourself in this way enables you to return to the rescue effort with a clearer mind and improved energy.

Using Personal Protective Equipment

Always use the proper safety equipment for the situation, including:

- Gloves.
- Goggles.
- Dust mask.
- Helmet.
- Work boots.

Following Safety Procedures

During rescue operations, follow established procedures at all times. Basic safety procedures include the following:

- Work in pairs—never alone!
- Never enter a building with heavy damage because it is considered an unstable structure. Mark the building to indicate that it is unsafe to enter, and leave immediately.
- Don't try to lift or carry more than is reasonable.
- Use proper lifting techniques.
- Carry the load close to the body.

Leveraging

Leveraging involves using a lever and fulcrum to move a heavy object.

- **Step 1.** Place a stationary object under the lever to act as a fulcrum.
- **Step 2.** Using the fulcrum, wedge a lever under the object that needs to be moved.
- **Step 3.** Force the end of the lever (arrow) down on the fulcrum. This action will lift the wedge end under the object raising it.

Leveraging Safety

When leveraging, it is important to remember to:

- Never put your hands and feet under the object that you are lifting.
- Use the principle of **lift an inch, crib an inch**. Raise the object slowly and stabilize it with cribbing material as you go.

Cribbing

A crib is a strong wooden framework that is built under the object that you are lifting to support its weight.

Box cribbing means arranging pairs of wood pieces alternately to form a stable rectangle.

Leveraging and Cribbing

Leveraging and cribbing are used together. The team alternately lifts the object and places cribbing materials under the lifted edge to stabilize it.

Leveraging and cribbing should be gradual, both for stability and to make the job easier.

The rule of thumb is: **Lift an inch, crib an inch.**

Leveraging/Cribbing Removal

Leveraging, cribbing, and victim removal takes at least five CERT members. Positioning for each member is:

- **Group Leader:** In front of collapse, positioned so that he or she can view the entire operation while remaining out of the rescuers' way. The group leader's function is to ensure that the rescue takes place safely.
- **Lever Person:** At the front edge of the collapsed wall and positioned so that he or she can position a fulcrum and lever under the wall.
- **Crib Persons:** On either side of the collapsed wall and positioned to enable the placement of cribbing as the wall is raised with the lever.
- **Medical Care/Victim Removal Person:** Next to the crib person who is closest to the victim's head.

More About Leveraging and Cribbing

It may be necessary to leverage and crib at more than one place (but **never** from opposite ends at the same time, as that could create an unstable condition) to ensure stability. This is a labor-intensive and time-consuming process, however. That is why CERTs should remove lightly trapped people first.

After Leveraging and Cribbing

When sufficient lift has been achieved, remove the victim from beneath the object.

Never leave an unsafe condition! After the rescue, slowly lower the raised object by reversing the leveraging and cribbing process. Lever the object and remove one layer of cribbing material until the object is down.

Debris Removal

When debris must be removed to locate victims, the CERT team should set up a human chain and pass the debris from one person to the next.

Be sure to set up the chain in a position that will not interfere with rescue operations.

And don't forget to wear leather work gloves to protect your hands!

Removing Victims

Rescued victims can be extricated using various techniques, including:

- Self-removal or assist.
 - One-person carries.
 - Two-person carries.
 - Group carries.
 - Dragging.
-

Selecting the Removal Method

The removal method used will depend on several factors, including:

- **General stability of the immediate environment:** In a structure with light damage, injured victims should be treated on-site by the medical team. In a moderately damaged building, the victim should be removed as quickly as possible using a method that is safe for the rescuers and the victim, given the amount of debris and available space.
- **Number of rescuers available:** One-person removals include the one-person arm carry, one-person pack-strap carry, and various drag techniques. Two-person removals include the two-person carry and the chair-carry. More rescuers are needed for the blanket carry or to use a backboard.
- **Strength and ability of the rescuers:** You should not attempt to lift more than is reasonable for your size and strength. The one-person arm carry is reserved for a small victim carried by a physically able rescuer. The distance to be covered should also be considered. Your safety is the number one priority, so opt out of any carry that you are not physically able to do.
- **Condition of the victim:** Physically able victims can assist in their own removal. If safety and time permits, a victim with a suspected closed-head or spinal injury should not be lifted or dragged. If removal is necessary, every precaution should be taken to keep the spine in a straight line using a backboard before removal.

When moving victims, rescuers must use teamwork and communication among everyone involved in the lift. This is important for rescuer and victim safety.

Self-Removal or Assist

It is usually best to allow ambulatory victims to extricate themselves.

However, ambulatory victims sometimes are weaker and more injured than they think. When victims become free from entrapment, they may need assistance to exit the structure.

One-Person Carry

The one-person carry should be used **only if the victim is small** and you are physically able to carry the person over the required distance.

To perform a one-person carry:

1. Reach around the victim's back and under the knees.
2. Lift the victim by lifting with the legs while keeping your back straight.

Pack-Strap Carry

Another way for a single rescuer to lift a victim safely is to perform a one-person pack-strap carry. To perform this carry:

1. Stand with your back to the victim.
2. Place the victim's arms over your shoulders and grab the hands in front of your chest.
3. Hoist the victim by bending forward slightly, until the victim's feet just clear the floor.

Two-Person Carry

Victim removal is easier when multiple rescuers are available.

With the two-person carry, the person lifting the feet can face either toward or away from the victim.

Performing a Two-Person Carry

1. Rescuer 1 squats at the victim's head, reaches under the victim's arms from behind, and grasps the victim's forearms across the midsection.
 2. Rescuer 2 squats between the victim's knees, facing either toward or away from the victim, and grasps the outside of the victim's legs at the knees.
 3. Both rescuers rise to a standing position, keeping backs straight and lifting with the legs, and walk the victim to safety.
-

Chair Carry

If a sturdy chair is available, two rescuers can seat the victim on a chair and use the chair for removal.

Performing a Chair Carry

1. Rescuer 1 faces the back of the chair and grasps the back uprights.
 2. Rescuer 2 squats, facing away from the victim. The rescuer reaches back and grasps the two front legs of the chair.
 3. Both rescuers tilt the chair back, lift, and walk out.
-

Blanket Carry

A variety of materials, such as blankets, can be used as improvised stretchers. The blanket carry can be used to remove victims who cannot be removed by other means.

Six rescuers are recommended for this carry to ensure the victim's stability during the move. One rescuer must be designated the lead person to ensure teamwork when performing the lift.

Removal by Dragging

If there is no other way to remove a victim from a confined area, the victim can be dragged.

This method should only be used when the victim's removal is time-critical and no other method is available. Do not drag a victim when debris may cause additional injury.

Drag techniques include the:

- Blanket drag.
 - Shoulders drag.
 - Feet drag.
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Blanket Drag

To perform a blanket drag:

1. Wrap the victim in a blanket.
 2. Squat at the victim's head and grasp the blanket behind the victim's head.
 3. Drag the victim clear of the hazard.
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Removal by Dragging (Continued)

Shoulders Drag

To perform a shoulders drag:

1. Grasp the victim by the shoulders.
 2. Drag the victim clear of the hazard.
-

Feet Drag

This same drag can be used with the feet. It should only be used if victim location does not permit other methods to be used. The rescuer needs to be cautious not to bump the victim's head during the drag.

Lesson Summary

The goals of rescue operations are to maintain rescuer safety, triage victims, and evacuate victims as quickly as possible while minimizing additional injury.

Rescuers can create a safe environment by:

- Working within their limits.
 - Using personal protective equipment.
 - Following safety procedures.
 - Using leveraging and cribbing to move and stabilize debris.
 - Using safe methods to remove victims.
-